Chemical Week

May 17, 1952

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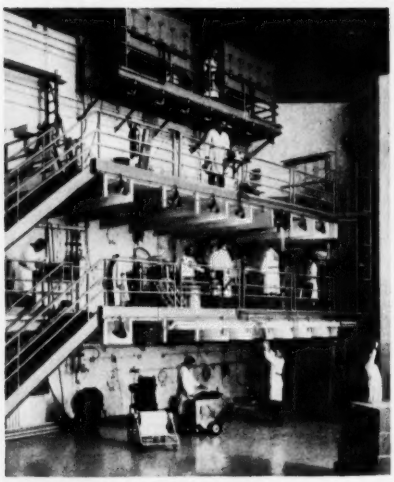

What do you think of the excess profits tax? Gauge your views against industry consensus . p. 16

Here's five-year sum-up of industrial isotope research: who and where, which ones, how used . p. 31

Cool $25 million is bet on future of slick all-chemical metal-winning process . . . p. 43

USDA opens door a crack for systemic insecticide sale; look for it to widen . . . . . p. 50

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Chemical Week

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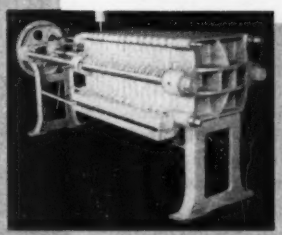

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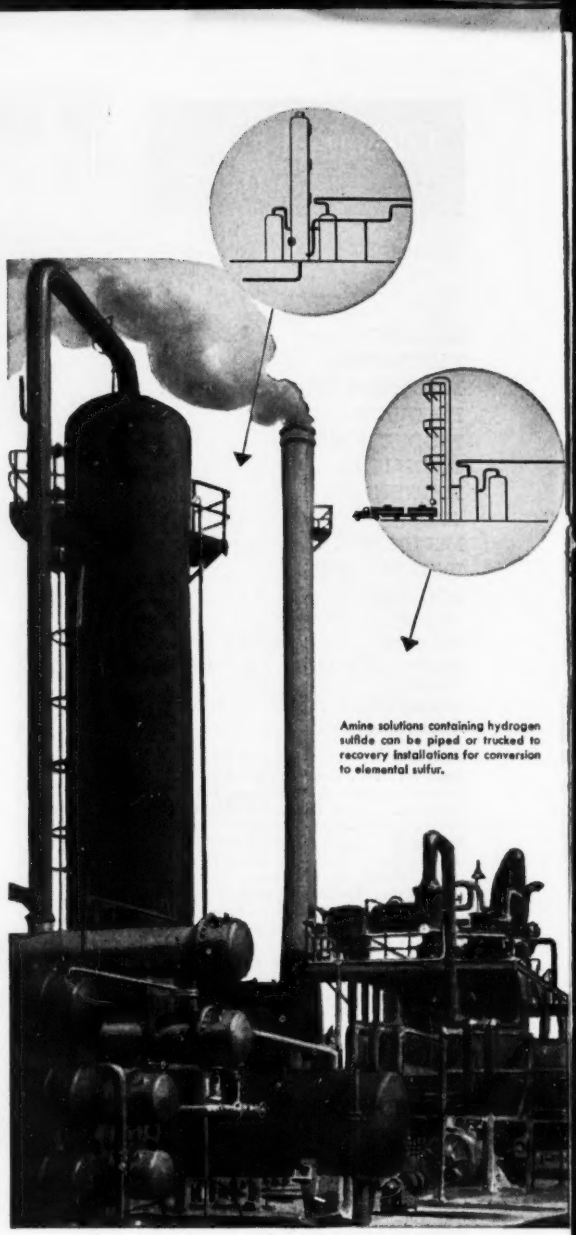
FACTS about ETHANOLAMINES



Amine solutions containing hydrogen sulfide can be piped or trucked to recovery installations for conversion to elemental sulfur.

The unique characteristics of the ethanolamines have led to their large volume use in varied industries. From dry ice to sulfur, from cosmetics to detergents, the mild alkalinity and high water solubilizing power of the ethanolamines are serving both industry and the household. To assist you in realizing full value from these basic materials, Dow offers you the following information:

For example, the ethanolamines can be used to recover hydrogen sulfide which can be converted to elemental sulfur. Also, you can control sulfur fumes with resulting lower maintenance costs from reduced corrosion. And, by preventing atmospheric contamination, your industrial standing in the community will be greatly enhanced. Many other uses can be developed for the ethanolamines in detergents, and cleaning and polishing compounds.

Despite today's shortages, Dow is interested at all times in helping you use the ethanolamines to best advantage in your present operations or in experimental work for future uses. For more information and technical assistance, write Dow using coupon at right.

Properties of Ethanolamines

	Monoethanol-amine	Diethanol-amine	Triethanol-amine
Molecular Weight	61.1	105.1	149.1
Boiling Point (760 mm.Hg),°F.	338.9	516.4	680.0
Freezing Point, °F.	50.0	81.7	87.6
Specific Gravity (77/77°F.)	1.015	1.093*	1.120
Refractive Index (77°F.)	1.453	1.475	1.483
Flash Point, °F.	185	285	—
Fire Point, °F.	190	330	—
Heat of Vaporization, cal./gm.	206.5	128.2	60.1
Heat of Fusion, cal./mole	3915	5351	3200

*at 80/77°F.

Solubility of Ethanolamines (at 77°F.)

	Monoethanol-amine	Diethanol-amine	Triethanol-amine
Acetone	∞	∞	∞
Benzene	sl. sol.	sl. sol.	sl. sol.
Ether	sl. sol.	sl. sol.	sl. sol.
VMP Naphtha	sl. sol.	sl. sol.	sl. sol.
Methanol	∞	∞	∞
Water	∞	∞	∞

This is one of a series of Dow advertisements you may wish to keep on file for reference and information. Write Dow for reprints.

USES OF ETHANOLAMINES

gas treatment

Monoethanolamine is used in removing carbon dioxide and hydrogen sulfide from gas streams. Then, the hydrogen sulfide may be selectively burned to produce sulfur.

When methane is burned to produce carbon monoxide and water in the manufacture of methanol, a certain amount of carbon dioxide is produced. This carbon dioxide, which would interfere with later operations, is removed with monoethanolamine.

Methane is scrubbed with monoethanolamine prior to making carbon black. This scrubbing removes any hydrogen sulfide which would subsequently be converted to sulfur and contaminate the carbon black.

Diethanolamine is used in much the same manner as previously described for monoethanolamine. However, diethanolamine may be used in cracking gases and coal or oil gases which contain carbonyl sulfide that would react with monoethanolamine.

surface active agents

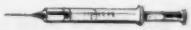
Monoethanolamine and triethanolamine may be reacted with sulfonated alkyls or fatty acids to produce detergents, soaps, shampoos and various cleaning compounds. To this date, the largest single use is in the production of a moderate duty household detergent.

Diethanolamine is used extensively in the production of lubricants for the textile industry. These lubricants can be easily removed by the use of a detergent. Also, diethanolamine is used in detergents, soaps and cleaning compounds.

cleaning and polishing compounds

Triethanolamine is used in the manufacture of cleaners and polishes for metals, wood, leather, floors, and furniture. Triethanolamine soaps act as emulsifiers and dispersing agents in these applications. Triethanolamine is also used in automobile polishing, cleaning and degreasing compounds. It is used in emulsion stabilizers and dispersing agent for waxes and industrial lubricants.

miscellaneous uses



Monoethanolamine is reacted with other chemicals to produce an accelerator which has greatly reduced the time required for producing penicillin. Monoethanolamine is also used in a variety of other products such as wax removal compounds.

Diethanolamine is used as an emulsifier and dispersing agent in various agricultural chemicals, cosmetics and pharmaceuticals.

PRECAUTIONARY MEASURES

The ethanolamines do not present an appreciable fire hazard. Monoethanolamine has the lowest flash point of the three (185°F.) and should not normally present a hazard except in cases of large leaks or spills.

The ethanolamines present no unusual toxicity hazards. Monoethanolamine may cause skin irritation in concentrations greater than 1% and contact should be avoided as much as possible. Diethanolamine is markedly irritating in concentrations greater than 10%. Triethanolamine is not seriously irritating if diluted and will probably cause no serious difficulty unless prolonged or repeated exposures are encountered.

Strict precautions should be observed whenever there is a possibility of eye contamination with an ethanolamine. All persons should wear face shields, goggles with side shields, or the equivalent. Suitable facilities for washing the eyes should be readily available. If contaminated, the eyes should be washed with large amounts of flowing water and medical aid should be summoned.

If an ethanolamine is spilled on the person, all contaminated clothing should be removed and not worn again until decontaminated. The exposed area should be washed with plenty of flowing water and medical aid should be summoned for victims of extensive or prolonged exposure.

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SHEFFIELD

OPINION . . . . .

Phosphate in France

To The Editor: I read in your Apr. 5 issue an article concerning a nitric-phosphate process in the pilot stage in the U. S. . . . and mentioning also several Continental companies.

It might be of interest to your readers to know that the Saint-Gobain Co. (Paris) for which I have studied those questions over many years, commercially operates . . . the sulphonitric and phosphonitric solubilization in several of its plants.

The total nitrogen output reaches 98%. The simplicity of the plant is such as the investments and the operating costs, especially labour, power and fuel are lower than those of other similar processes.

I enclose a copy of the paper I presented last year at the meeting of the International Superphosphate Manufacturers' Association, in which I study the various technical processes available and their respective interest.

Yves Martin
Saint-Gobain Co.
Paris, France

Thanks, Reader Martin. Copies of the paper are available from International Superphosphate Manufacturers' Association, 32 Old Queen St., London, England.—Ed.

More on Milwaukee

To The Editor: Your reporting of Milwaukee's portion of the A. C. S. 121st National Meeting was disappointing in that it was sketchy and in certain respects misleading.

The article was sketchy in that while it did cover a few of the major events, of what has been referred to as a highly successful meeting, it missed others of equal or greater prominence. To name a few: the fine ladies' program, the excellent list of plant trips patronized by over one-third of the 3006 conventioneers and the unusually successful Mixer which were arranged by a Milwaukee Section hard-working committee in cooperation with local industry were not mentioned.

I also would like to correct the impression given by the statement, "The incessant crashing of bowling pins in the neighboring Milwaukee Arena provided punctuation for . . . chemists' conversations and papers as registrants at the A. C. S. and American Bowling Congress meetings vied for scarce hotel rooms."

When A. B. C. decided to come to Milwaukee . . . they were advised of the previously scheduled A. C. S. meeting and promised not to interfere in hotel occupancy . . . by scheduling almost entirely local teams.

That the A. B. C. kept their word can be verified by a perusal of the list of teams competing . . . and by the Milwaukee Convention Bureau's hotel count . . .

It should be reported that while all chemists could not obtain the accommodations requested all who applied were offered space in a Milwaukee hotel. Neither did the bowlers interfere with the presentation of papers as the noise of falling pins was only faintly audible in the corridors and not at all in the meeting rooms of the Milwaukee Auditorium.

It may interest the readers of Chemical Week to learn that the "Welcome A. B. C." signs were furnished by the A. B. C. in an effort to boost spectator attendance and thus increase the tournament's revenue during their 85-day stay in Milwaukee.

James F. McKenna
General Chairman
A. C. S. 121st National Meeting
American Chemical Society
Milwaukee, Wisconsin

To The Editor: . . . During the past sixteen years I have attended dozens—or rather hundreds—of conventions and meetings of all sorts, shapes and sizes. And after every such session I endure I always read the reports in the various trade journals concerning the meeting I have just attended. . . . They bore me.

The report is always the same. Five hundred members of the Fertilizer Fanciers Fraternity met in the Hotel Hump and heard Top Fancier Smith introduce Subsoil Fancier Jones of Subsoil and Associates who told the gathered assemblage (it's always an assemblage and it's always gathered) of the startling progress being made in subsoil substrata . . . and in windy detail. . . .

Your reports on the recent A. C. S. meetings in both Buffalo and Milwaukee were different. They were terse, uncluttered with detail . . . pointed out significant developments . . . conveyed to me the tenor of the meetings.

Your reporters must certainly have covered a lot of sessions from stem to stern to get the "feel" and significance in so few words. . . . Congratulations. . . .

A. R. Keefer
Los Angeles, Cal.

One fer, one agin, can't win.—Ed.

Announcing for late summer . . . a new source of pure aromatic hydrocarbons.

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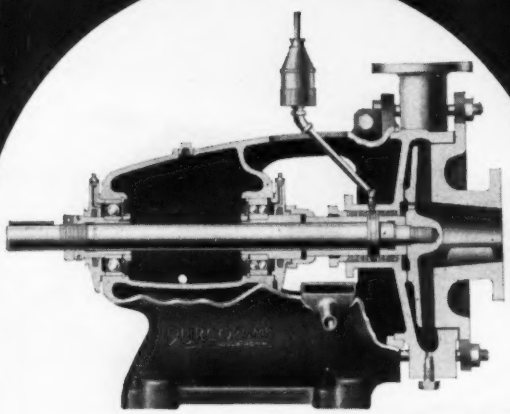

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THE DURIRON COMPANY, Inc.
DAYTON, OHIO

OPINION . . . . . .

"Pilot" in One Sense

To The Editor: You are to be congratulated on the quality of the reporting on the Florida Petrochemical Corp. gas-chemical project at Port Everglades, Fla. (May 3). The clear, accurate, hard-hitting language of your news items and feature articles is a characteristic of your journal that we take for granted until we see an item or a subject of particular interest. Then true appreciation of your reporting is possible.

There is one connotation in your notice which is perhaps unfortunate. The Florida Petrochemical plant is not experimental in any physical sense of the word. The United Gas Improvement Co. built and operated a small commercial plant which has been purchased and operated for six years by the Pennsylvania Industrial Chemical Co. (Chester, Pa.) where the original plant may be seen in operation on a routine basis today.

During the last war, the Ugite process—which is simply regenerative cracking of selected crude oil in conventional oil gas manufacturing equipment—was operated on a 21,000-bbl. per day scale at Southern California Gas Co. to produce large quantities of butadiene for the synthetic rubber program.

The "pilot" nature of the project is of significance only in the sense that this operation may well point the way to many similar units at the terminal ends of long natural gas pipe lines. Such units, supplying peak-load and stand-by high-BTU gas interchangeable with natural gas, could become an important factor in the production of crude aromatic chemicals—just as gas works coke ovens once were.

Incidentally, our company will be the principal engineering contractor on the Florida Petrochemical plant.

Harold Reintjes
Vice President and
General Manager
Petrocarb Equipment, Inc.
New York, N. Y.

For a valued extension to our reporting our thanks to Reader Reintjes. We deliberately shunned, of course, any use of the word "experimental," said: "Company officials see this project as a "commercial-scale pilot plant" for future operations.—Ed.

Rare and Pure

To The Editor: Your recent news article on Dr. Spedding and his work with the rare earths (Mar. 29) was of great interest to us. The results and

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labors of the Iowa State laboratory have been of great value in the rare earth field.

However, in your listing of the prinicipal producers of rare earths . . . no mention was made of the availability of purified rare earths.

We have been offering purified rare earth oxides and salts for close to five years. . . . These are produced in our laboratories by a variety of techniques. . . . We believe that our offerings relieve many [researchers] of the tedium of their individual preparations.

We too are fond believers in the future of rare earths. . . .

E. V. KLEBER
Research Chemicals Inc.
Burbank, Cal.

Category Switch

TO THE EDITOR: In your Apr. 25 issue is a table entitled "Chemical Stock Purchases by Investors' Investors," with an accompanying article called "Reflected Blueness." In the tabulation under common stock funds is a column which represents Massachusetts Investors Trust.

. . . The table . . . gives a wrong impression concerning the investment status of a fine company. The complete elimination of Chas. Pfizer and Co. common stock from our portfolio in the amount of 35,000 shares is indicated, which is not correct.

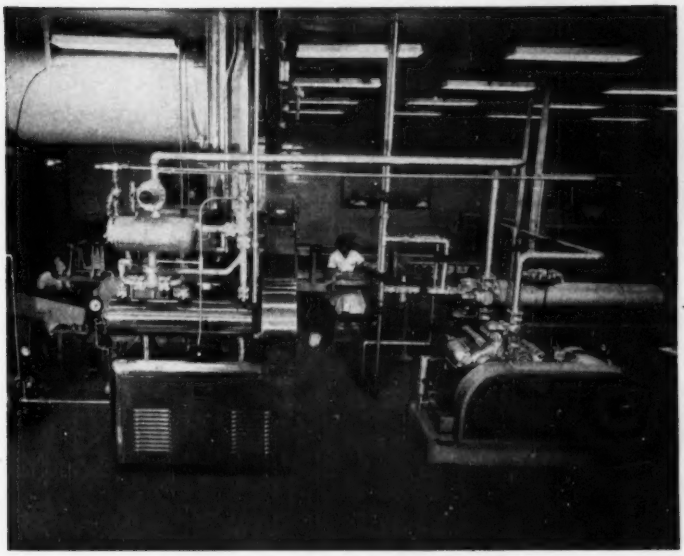
I am enclosing copies of the annual reports of the Trust for 1950 and 1951 . . . you will note that at the end of 1951 we held 90,000 shares of Pfizer worth $3,780,000, compared with the 30,000 shares worth $2,535,000 a year earlier. During 1951 the stock was split three-for-one.

J. L. COOPER
Massachusetts Investors Trust
Boston, Mass.

True enough, Reader Cooper and we regret any erroneous impression our tabulation may have conveyed. CW listed all the chemical holdings of trusts, duly recorded Pfizer as one of Massachusetts' 1950 chemical holdings. The 1951 report does not include Pfizer under the chemical category—does record the investment under a "Drug" category. The switch in classification was, of course, the Trust's. —ED.

CW welcomes expressions of opinion from readers. The only requirements: that they be pertinent, as brief as possible.

Address all correspondence to: The Editor, Chemical Week, 330 W. 42nd St., New York 36, N. Y.



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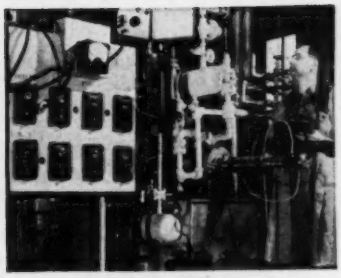
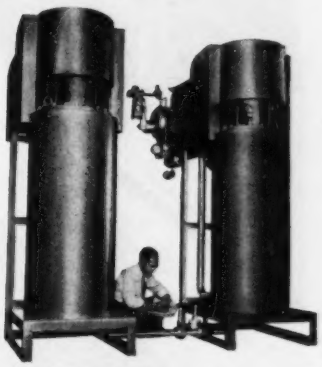
VOTATOR Heat-transfer Apparatus is widely used for heating or cooling, crystallizing, controlling heat of reaction, and many other processes. Girdler's complete service includes process engineering and design, manufacture of equipment, and installation. Call on Girdler in the *planning stages* of your processing facilities.



Process Research

Girdler's pilot plant and laboratory facilities are available for the development of new processes and equipment, and for special research on new processing applications. Outstanding Girdler chemists and engineers have developed distinctive processes and equipment for many operations. Let Girdler help with your process problems.



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Among products involving straight heating or cooling now being processed with VOTATOR Heat-transfer Apparatus are: phenolic resins, formaldehyde resins, alkyd resins, melamine resins, vinyl resins, wax, viscose, rosin, printing ink, chlorinated hydrocarbons, latex, asphalt emulsions, photographic emulsions, wax emulsions, linseed oil, lecithin, gelatin, and petrolatum. Depending on the heat-transfer medium used, materials can be heated as high as 700°F, or cooled as low as -140°F.

Want Information?

Girdler's Votator Division designs and builds complete plants for processing edible oil, food, and many other products; and supplies heat-transfer equipment for continuous processing of liquid and viscous materials. Write for Bulletin V-48. The Girdler Corporation, Votator Division, Louisville 1, Kentucky. District Offices: San Francisco, Tulsa, Atlanta, New York. In Canada: Girdler Corporation of Canada Limited, Toronto.

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NEWSLETTER

The chemical industry's long-smoldering gripe against OPS's administration of price controls flared up in the Manufacturing Chemists' Association's demand this week: Clarify by law the Capehart amendment to the Defense Production Act or permit all controls to expire June 30.

MCA charged (in a letter to Sen. Maybank, Chairman of the Senate Banking and Currency Committee) that OPS administratively nullified the price relief Congress intended to grant by the amendment.

Using the testimony of OPS Director Arnall, the Association cited the low number of companies seeking price adjustment under the amendment as evidence it offered no relief.

Nub of the MCA argument: The net effect of the amendment, as administered, is to produce lower ceiling prices than the original regulation (CPR-22) for manufacturers who have greatly increased production at the Government's behest—as the chemical industry has done.

What MCA proposes: Allow firms subject to price ceilings to recalculate every 6 months—beginning Dec. 31, 1951—their ceiling price to reflect any cost increases or decreases during the interval.

The synthetic vs. natural fiber battle is being staged in Washington too. It's rapidly becoming an outright brawl.

DPA chief Fleischmann's statement that a decision on establishing expansion goals for synthetics would be made "in two or three weeks" was the gong. Wool producers (already reeling from the textile slump) and their congressmen lashed out with a new argument: "Why issue tax write-offs for synthetics when expansion is already under way?"

About 30 certificates for rayon, newer synthetics are pending. Manufacturers want them primarily to assure controlled material delivery.

You won't get a blueprint for future material controls until the steel hassle is settled. But that there will be considerable relaxation of present regulations is certain.

Metals will be among the last to be decontrolled. Fleischmann told a House Committee that at peak production, AEC and military programs will take one-fifth of the steel, two-fifths of the aluminum and one-third of the copper that will be available.

These two are now consuming 55% of available magnesium, 70% of nickel, 73% of cobalt. And it doesn't look as though the bite will get any smaller.

Materials shortages are not over, warns Fleischmann. Only 33% of stockpile objectives has been realized.

Copper is the current emergency metal because of the termination by Chile of its agreement to sell us 80% of its production at 27½¢ a pound.

Negotiations for a renewal of the agreement are being carried on at State Department level. The Chileans are willing to supply us, but they want a higher price.

If we don't continue to get shipments, the Government will have to dip into the stockpile to fill second-quarter copper allocations.

NEWSLETTER

The Food & Drug Administration's controversial bread standards became law this week—effective three months hence.

As in the tentative standards, chemical "softeners" (Polyoxyethylene stearate and related compounds) are excluded, although mono- and diglycerides got the Federal Security Agency's okay.

FSA's reasons—still the same as earlier: Use of softeners deceives customers, makes stale bread seem fresh. Polyoxyethylene compounds, alleges FSA, have not been adequately tested for safety, whereas the glycerides have been used for twenty years.

Seriousness of the oil strike's effects on chemical production become more evident as reports filter in hour after hour:

Phillips Chemical's butadiene plant (Borger) is operating but its copolymer plant (Borger) is shut down . . . Butadiene now goes to Goodrich, U. S. Rubber (Both Port Neches) and others . . . Its ammonia plant (Cactus) has been operating at 50% with supervisory workers; The company got a permanent injunction preventing interference with shipments of ammonia to its ammonium sulfate plant (Pasadena) which had to shut down but is now reopened.

Consolidated Chemical Industries (Houston) was not struck; refiners aren't buying sulfuric, but other customers are taking the output . . . but loss of refinery business has affected muriatic production of Bay Chemical (Weeks Island, La.), Frontier Chemical (West Texas) and Consolidated Chemical Industries (Fort Worth).

Lion Oil Co.'s ammonia plant (El Dorado, Ark.) is operating at 60% with supervisory personnel, but its nitric acid, ammonium sulfate and ammonium nitrate units are shut down.

Diamond Alkali cut its output by half for the duration of the strike; reason: loss of orders.

Jefferson Chemical (Port Neches) closed down when the strike was called for its annual clean-up and repair; now its feed stock has been cut off by the strike at Texas Co.'s Port Arthur refinery.

Mathieson Chemical's sulfuric plants at Beaumont and Port Arthur are running; output can't be sold to refineries, of course, so it is shipped to the company's Pasadena plant (still running) for conversion to fertilizer. The fertilizer plant is not unionized.

Sinclair Rubber (Houston) is scrabbling for feed stock to keep its butadiene unit operating. Feed stock had come from Sinclair Refining's now-struck plant . . . Goodyear Synthetic Rubber (Houston) operates on Sinclair's butadiene, expects to continue its current output rate through May.

It's a spotty picture . . . marked by improvisations . . . upset market patterns. But the majority feeling in Texas—to which, of course, there are many exceptions—is that loss of output and markets isn't as bad as was expected. Besides, many production units—particularly for sulfuric—were running on borrowed time to meet demand, were due for repairs.

A change in the economic climate has caused Shell Chemical to abandon plans for ethyl chloride expansion and for a joint vinyl chloride venture with Diamond Alkali. But it's considering a "more attractive endeavor."

Diamond, on the other hand, is going ahead with its end of the plans: vinyl chloride monomer and polymer, and perchlorethylene.

. . . The Editors

ERIEZ MAGNETIC ATTRACTIONS

MR. T.I.

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BUSINESS & INDUSTRY . . . . .

FLEISCHMANN (left) and FOWLER: New face, new policy.

For the Better

Chemical businessmen, casting wary eyes at steel and oil labor troubles (CW, May 10), could at least breathe easier on another point. Barring a flareup in Korea, decontrol of many materials and less control over prices and wages seemed in the cards.

Keynoting this change was the appointment of Henry Fowler as new chief of the Defense Production Agency. He will continue as head of the National Production Authority.

While changes would still have come if Manly Fleischmann had stayed on with DPA, Fowler is a stronger proponent of indirect material controls.

Pressure for decontrol is mounting in Congress. In many ways, Fowler and fellow controllers Ellis Arnall and Nathaniel Feinsinger are on their good behavior. The Defense Production Act is to expire June 30, and unless they now prove that they can adapt their actions to the present mobilization plateau, they may not get much of a law to work with.

Criticism of the mobilizers has, of course, been brought to boil by the steel fawfaraw. While neither DPA nor NPA have been involved, they may be hurt in coming legislative squabble.

Five Congressional committees are considering eight different bills on the situation; of greatest importance is the fact that both House and Senate banking committees are completely rewriting the Defense Production measure.

It is still too early to forecast all the details of future mobilization law or administration, but it's almost a foregone conclusion that most material controls will be shelved and economic curbs significantly weakened.

Lire No Liability

When National Aluminate's new Italian plant goes on stream this week, it will be producing, in addition to boiler-treatment chemicals, a dollar return on investment for its Chicago parent.

This happy circumstance stems from the Mutual Security Agency's opinion that Nalco's plant would "promote the operational efficiency of many [European] defense industries." As a result, MSAgent W. Averell Harriman took enough time out from running for President to grant Nalco a contract which guarantees the convertibility of lira profits into U. S. dollars up to a maximum of $1,331,000 between now and 1962.

The guarantee covers a wide range of corporate transactions between the American firm and its wholly-owned Italian subsidiary. Included are payments of dividends on stocks, interest and annual installments on a $220,000 loan, royalties for formulas, and payments for patent rights. About the only protection not granted is against loss from expropriation, and that is being currently negotiated between Nalco and MSA.

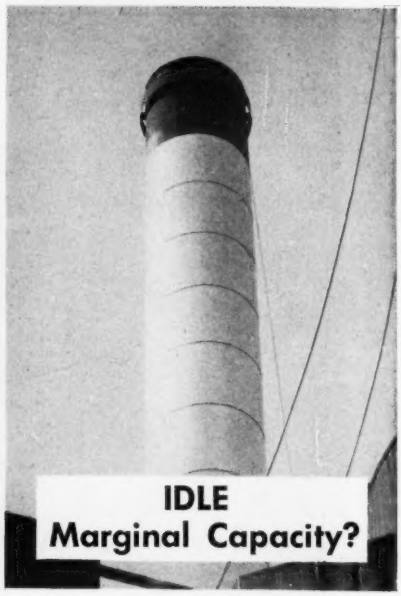
Not Alone: Such contracts are becoming a common occurrence on the scene of international commerce. The Export-Import Bank of Washington, acting as agent for MSA, has in its files a variety of such agreements covering a total liability of approximately $34 million.

Of these, a fair number involve the U. S. chemical industry. These include coverage of pharmaceutical plants for Heyden Chemical (France), E. R. Squibb & Sons (Britain and Turkey), and Parke, Davis & Co. (Britain), as well as a carbon black plant for Godfrey L. Cabot (Britain) and a silicone plant for Dow Corning (France).

MSA's tests for qualifying under the program are rather stringent. The applicant must be a largely-American firm which is making a new long-term investment overseas. Both MSA and the foreign government must agree that the materials to be produced are an asset to the joint defense effort. Finally, the plant must be located in one of the countries with which MSA has negotiated agreements covering such contracts.

In this category are the Philippines and ten European nations. Twelve more countries around the globe should be added soon, but up till now nothing is planned for Latin America, where a large amount of American investment capital is moving.

HARRIMAN: Dollars for dollars.



EPT—Is it Living Up to its . . . .

Tax confusion was in the air last week. As usual, the storm center was over Capitol Hill, where the warm masses of tax-cutting talk (coming from the revenue committees) were knifed by the cold front of a report urging increased tax penalties on retained profits.

All this has a direct effect on chemical business men, and CW has been talking taxes with them during the last few days to catch their current sentiments. Main item in the discussions was the excess profits tax, which is the first major tax up for extension, revision, or extermination by the new Congress next year.

Washington's confusion is mirrored across the country. After nearly two years of experience with EPT, there is neither unanimity of opinion on the effects experienced nor agreement on recommended changes for the future. Many of the industry's comments are downright contradictory.

Fielder's Choice: This can largely be explained by the nature of the tax itself. Its impact is directly a function of a company's present performance compared to its record during a past period. Moreover, it is within management's power to alleviate the severity of the tax-bite by purposefully manipulating its customary spending patterns.

These factors result in wide variability of effects felt by individual firms and in an even wider variation of approaches used by company officers to meet the problems created. In a sense, any evaluation of EPT's record must be studied against the back-drop of the companies polled—their personalities, history, ambitions, and size.

Take, for instance, the average chemical firm's ability to resist the siren song of the 18¢ dollar. When EPT was originally being proposed to Congress, the direst warnings were sounded about the temptation to splash cheap money into advertising, expense account, and research budgets. This flood of dollars, which would otherwise be en route to the Government, could prove to be the critical crest in the overwhelming of the dikes against inflation.

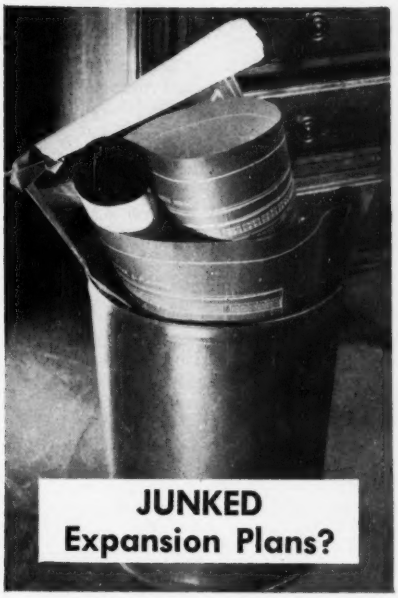
Human Factor Neglected: But this view failed to a large extent to take into consideration the basic soundheadedness of the American businessman. As one chemical company treasurer put it: "We're trying to live on the theory that EPT won't be with us forever. We're trying to economize without looking to government to control our problems."

Most of the comments, however, indicate that high-level policy on such matters is difficult to implement. The financial brains of the firms questioned are generally fighting a rear-guard action against free-spending activities, as these statements reveal:

- "Taxes encourage waste. Employees are well aware that . . . the government will get most of the money. As a result they think in wasteful terms, consciously or not."
- "A company feels no shame in setting up its own pork barrel."
- "We discourage the idea of prodigal spending merely because the dollar is cheap . . . but there's a lot of padding of expenses."

Nowhere is the influence of individual business philosophies more apparent than in the attitudes towards expansion during penalizing high-tax periods. All agree that EPT has taken away much of the immediate incentive to grow, but at least half of the companies are going ahead with their original plans. They are taking the view that today's expansion will yield tomorrow's profits, and by that time the EPT should be just an unpleasant memory.

One treasurer made this additional point: While he agrees that chemical manufacturing as a growth industry should be especially hard hit by EPT, yet in his mind its true progress is like that of a caterpillar tread—technologically out-dated products and processes are dropped at approximately the same rate as newer ones are added. Consequently, he feels, the



Reputation?

chemical industry should be able to maintain its forward motion without running afoul of the EPT dampener.

Survival of the Fittest: This would, of course, accelerate the closing down of marginal facilities, a questionable development during an all-out defense period. In one form or another, the thread of this idea runs through all of the comments. Pricing policies are based on a desired return on investment—after taxes. With EPT tacked on top of the high normal and surtax rates, rough sledding is ahead for products which can't withstand the price-cutting movements of the current deflationary trend.

Even here there are contradictory opinions. A few companies are taking the position that the profit dollars which they are not getting from these marginal operations would not be theirs anyway because of EPT; therefore they plan to continue "trading dollars" to keep their gross sales figure high.

When it comes to thoughts on what should be done with EPT next year, the financial wizards find themselves on the horns of a dilemma. Their initial reaction is to "kill it," substituting a higher normal tax to keep the total revenue approximately the same. There is general agreement that this would be fairer to all concerned.

But the stickler is that it is much easier to eventually shuck a special tax like EPT than it is to reduce an established tax rate. A combined normal and surtax pattern of, for instance, 60% is as dangerous for the normal growth of industry as the EPT and it has the added danger of losing its identity as a strictly emergency defense measure.

Most of the suggested compromises settle around a sort of super-surtax which could be reviewed and re-voted on each year. Most of these suggestions were, however, mainly in the form of footnotes to demands that the government reduce spending and thereby reduce taxes so that industry can get on with its job.

Attentive Analysts Listen

The chemical process industries took their share of the spotlight last week as top management drew a picture of the present industrial scene for the nation's financial analysts at the latter's annual convention on the West Coast.

A glittering roster of executives, including 12 presidents, 3 board chairmen, gave out with what struck listeners as fairly candid opinions on the financial health of over a dozen U.S. industries. General flavor: Things are okay, future good.

Chemical Quotes: Much attention was paid to the CPI sector of American business, with lucid remarks bouncing thickly about the ears of the attentive analysts.

"It is not too far-fetched to foresee steel automobile bodies replaced with light, strong, corrosion-proof, non-bendable bodies made of glass fiber and a petrochemical-derived plastic. We have already started producing synthetic lubricants superior to those from oil . . . foresee synthetic gasoline, many chemicals from the gasification of coal."—*John D. Fennebresque*, vice president, Celanese Corp.

"Since the beginning of World War II the chemical industry of the U.S. has experienced, in terms of production, more than a threefold increase. . . . Western chemical industry has expanded even more rapidly. Not only has it kept pace but . . . has increased from 4% to nearly 6% of the total. In contrast chemical consumption in the 11 Western states accounts for some 8% of the national total . . . this gap will gradually be reduced as the western market for individual products increases sufficiently to justify installation of economically feasible units of chemical manufacturing capacity."—*Paul L. Davies*, president, Food Machinery & Chemical Corp.

"While I believe we . . . must be aware of the possibility of a painful shakeout in chemical earnings in the event of a sudden downturn in business activity, I also believe it is not only wise but very desirable for the industry to undertake the maximum expansion of facilities it can safely handle under certificates of necessity."—*Bruce R. Carlson*, Stein, Roe and Farnham, Chicago.

Timber and Point Four: In the

CHEMICAL COMPANIES—HOW THEY FARED

Company, period	Sales 1952*	Sales % chg yr. ago	Pre-tax earnings 1952*	Pre-tax earnings % of sales	Pre-tax earnings % chg. yr. ago	Net earnings 1952*	Net earnings % of sales	Net earnings % chg. yr. ago
Liquid Carbonic, QMar31	8.7	-11.9	- 0.4	- 4.4	-153.3	- 0.02	- 0.2	-103.5
Sun Chemical, QMar31	10.0	- 9.6	0.6	5.8	-61.1	0.2	1.7	-64.9
Sterling Drug, QMar31	41.9	2.4	7.8	18.7	-14.9	3.2	7.6	-18.1
Minn. Mining & Mfg., QMar31	44.0	- 0.9	10.8	24.6	- 9.1	3.8	8.7	-11.2
Duval Sulphur & Potash, QMar31	1.6	30.6	0.6	36.2	47.1	0.5	27.8	28.4
Standard Oil (Ind.), QMar31						31.3		- 7.3
Continental Oil, QMar31	94.5	1.6	13.4	14.2	-25.6	9.4	9.9	-15.5
Tide Water Assd., QMar31	107.1	4.4	7.7	7.1	-46.6	6.8	6.3	-24.2
Abbott Labs., QMar31	25.0	4.1	6.2	24.8	-20.6	3.3	13.3	-12.4
Natl. Chem. & Mfg., 6moMar31	2.8	11.8	0.2	7.3	- 1.4	0.1	3.2	- 7.2
Walker Labs., QMar31	0.4	12.5	0.04	12.1	0.0	0.03	6.2	- 7.4
American Viscose, QMar31	54.1	-25.7	9.8	18.1	-50.7	4.2	7.7	-34.4
Goodyear, QMar31	280.8	5.2	24.9	8.9	-32.0	7.4	2.6	-22.1
Kennecott Copper, QMar31						21.7		-14.0
Visking, QMar31	7.3	- 4.0	1.2	16.2	-40.6	0.5	6.5	-30.0
Chas. Pfizer, QMar30	30.3	30.2	10.9	36.0	5.9	3.3	11.0	- 3.0
Cons. Chem. Ind., QMar31	6.3	- 9.3						
Penn Salt, QMar31	14.8	18.8				0.9	6.3	-29.0
Natl. Lead, QMar31	90.1	-14.1	11.7	13.0	-21.0	4.7	5.2	- 9.0
Archer-Daniels-Midland, 9moMar31						5.7		-35.5
Ashland Oil, QMar31						4.1		30.3
Bristol-Myers, QMar31			2.3		-34.9	1.0		-36.0
Michigan Chem., QMar31						0.2		-23.0
Harshaw, QMar31	11.6	-11.7	0.2	1.5	-11.1	0.08	0.7	-82.9
Harshaw, 6moMar31	22.5	-10.3	0.5	2.2	-83.6	0.3	1.2	-68.3

* Millions of dollars

course of the meeting considerable notice was taken of the steady trend towards concentration of available forest lands in the hands of the Government—a fact of prime concern to the lumber and paper industries. Another focal point was the Point Four program's effect on industry.

"I believe most of us see the fundamental soundness of the . . . concept associated with the Point Four program, and the importance to our economic well-being of integrating and keying American business enterprise and industry operation to essential raw materials obtainable overseas." —*R. G. Follis,* chairman of the board, Standard Oil Co., California.

Buyer's Market: Specter of customers in the saddle hung over the meeting and brought some bitter remarks, and a challenge from Celanese's Fennebresque.

"Formaldehyde and methanol plants are not operating at capacity. Yet, in spite of the current buyer's market, DPA has recommended an increase in formaldehyde and methanol capacity. . . . Gentlemen, we have returned to the days of tough selling. Installed capacity is sufficient to meet demands in the foreseeable future—all-out war withstanding. I personally welcome the return to the competitive challenge."

Gold in the Ballroom

The clatter of Hotel Commodore waiters, distributing coffee and ice-cream cakes to 400-odd chemical industry executives, signalled that the climax of last week's American Institute of Chemists annual meeting in New York was at hand.

Under the bright lights of the West Ballroom rose the out-going president, gregarious Lawrence "Mike" Flett, to tell the assembled group what they already knew: the man who was about to receive the 1952 AIC Gold Medal Award, Fred J. Emmerich, amply deserved the honor because of his many accomplishments and especially because of his devotion to the aspects of human relations in the chemical industry.

Chemists are People: With characteristic modesty, Fred Emmerich accepted the medal on the basis that it was being awarded to the entire organization of his many-faceted Allied Chemical and Dye Corp. As a long-time student in the application of the human equation to industrial problems, he went on to urge that the scientific method be increasingly used in solving the difficulties which arise between individuals and groups of men.

This message typified the spirit of the meeting which lasted from Wednesday morning till toastmaster Sid Kirkpatrick's closing remarks Thursday night. The great bulk of the talks and panel discussions centered on the chemist as a distinct personality, his problems, safety, responsibilities, and aspirations.

Elected to serve as president of the Institute for the coming year was Lincoln T. Work, New York consulting chemical engineer.

COMPANIES. . . .

Chemstrand: Initial production of the company's acrylic fiber, Acrilan, has been delayed. Originally, a part of its Decatur, Ala., facilities was scheduled to begin operation near the end of April.

• Incidentally, Chemstrand's corporate parents, Monsanto and American Viscose, had each invested a total of $12.5 million at the end of the first 1952 quarter. During March, each underwrote $6 million which Chemstrand borrowed under its long range $110 million financing program. The underwriting is security for money loaned Chemstrand in excess of its bondable assets.

•

Food Machinery & Chemical this week marketed $14 million worth of preferred shares (*CW, May 3*). It also has negotiated a $15 million stand-by loan which it can draw upon any time in the next 5 years. Interest rate will be ¼% higher than the going rate at the time money is drawn. It will pay $75,000 yearly for the option (but, of course, under present taxes its net cost will be considerably less).

• The money will be "insurance" in that if the market rises, it can be used for expansion of facilities. If it drops, the cash will be on hand to buy up other companies.

•

Monsanto (Canada) has purchased the common stock of Barringham Rubber and Plastics, Oakville, Ont. Barringham will manufacture vinyl chloride plastic as a Monsanto (Canada) subsidiary. The investment by Barringham in its plant was better than $2 million.

•

Union Oil of California's $35 million 3.125% convertible debenture offering was oversubscribed last week. Due date on the bonds is 1972.

LABOR. . . . . .

Workers Back: Employees of Continental Rubber Co., Erie, Pa., who walked off their jobs were back at work last week pending mangement's answer to a request for grievances discussion.

The walkouts were unauthorized by the United Rubber Workers (CIO) local representing the workers, but the union has decided to meet with management in an effort to settle the dispute.

•

Too Much Pay: Two Denver oil well drilling companies have been penalized for paying wages above Wage Stabilization Board regulations in the oil industry.

Penalties were assessed against the J & L Drilling Co. for $2,663 and against the Pennant Drilling Co. for $862. Both companies agreed to sanctions without argument. The amounts

Current List of DPA-Certified Chemical Facilities

Company, Location	Product	Amount Certified	% Certified
Esso Standard Oil, Linden, N.J.	Sulfur	$1,290,000 260,000	70 40
Sid Richardson Petroleum, Winkler City, Tex.	Sulfur	177,350	70
Allied Chemical & Dye, Monument, N. Mex.	Sulfur	80,000	70
Shell Oil, Wilmington, Calif.	Benzene	100,000	90
Universal Oil, Mooringsport, La.	Benzene, toluene comps.	594,000	75
Jefferson Chemical, Port Neches, Tex.	Nonyl phenol	280,500	40
Bay Petroleum, Denver, Colo.	Butane, butylenes	1,546,800	65
Standard Oil (Ohio), Lima, Ohio	Propane, butane	1,050,000	65
Socony-Vacuum, Paulsboro, N.J.	Bead catalysts	1,618,000 325,000	75 50
Edwal Laboratories, Ringwood, Ill.	Metal Formaldehyde bisulfite Chemicals	118,500 9,500 20,832	45 45 45
Diamond Alkali, Dallas, Tex.	Sodium silicate	392,390	55
National Lead, Elwood City, Pa.	Zirconium tetrachloride	73,930	65
Ohio-Apex, Nitro, W. Va.	Phosphorus oxychloride	181,605	70
Tennessee Corp., Washington, D.C.	Manganese sulfate	737,465	70
Wilson & Co., Calumet City, Ill.	Cholic acid	251,000	55

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(Polyethylene Glycol Di [2-Ethylhexoate])

. . . An excellent low-temperature plasticizer for the vinyl chloride resins and synthetic rubbers. Rubber stocks containing 4GO have high tensile strength, high elongation, and good resilience.

FLEXOL plasticizer 3GO — **-74.2°F.**
Brand
(Triethylene Glycol Di [2-Ethylhexoate])

. . . An outstanding plasticizer for neoprene. 3GO is also an effective processing aid in compounding perbunan types of synthetic rubber.

FLEXOL plasticizer TOF — **-101.2°F.**
Brand
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. . . TOF is a recognized standard where *extra* low-temperature flexibility is required. Brittle points as low as –70°C. in vinyl compounds are common with this plasticizer. TOF combines in a single low-temperature plasticizer:

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- Flame resistance—vinyls plasticized with TOF will not support combustion

** Temperature at which the viscosity of a plasticizer is approx. 50,000 centistokes. Low pour points are indicative of good low-temperature properties.*

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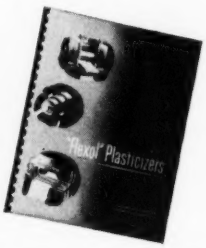


Production of vinyl plastic and rubber products for military use has made low-temperature properties more important than ever before. FLEXOL *plasticizers offer a range of low-temperature properties in combination with a wide choice of other basic properties. For more specific information, write on your company stationery or call any Carbide and Carbon office for our new 76-page* FLEXOL *Plasticizers Catalog (ask for F-5882).*

"Flexol" is a registered trade-mark of Union Carbide and Carbon Corporation.

will be disallowed as a cost for income tax purposes.

•

Rubber Workers Lose: The office workers of B. F. Goodrich Co., Akron, Ohio, decided at a NLRB election last week that they do not want Local 5, United Rubber Workers (CIO), to be their bargaining agent.

The margin was only 34 votes out of the 1,034 cast. The vote culminated a recent wave of trouble which had resulted in a bitter strike. Union officials however, indicated that they intended to keep up the fight to organize the workers.

•

Cost of Living: Westinghouse has given a cost-of-living hike to approximately 15,000 non-union employees. The same increases were offered simultaneously to the four unions representing more than 75,000 of the company's employees: International Union of Electrical Workers (CIO), United Electrical Workers (Independent), Federation of Westinghouse Independent Salaried Unions, and International Brotherhood of Electrical Workers (AFL).

The raises are contingent on WSB approval.

•

Mixup: According to Standard Oil Co. (Indiana) the reported settlement made with Central States Petroleum Union, Local 101, at the company's Sugar Creek, Mo., refinery, calling for a 15¢-an-hour boost, is no longer in effect. The company maintains that the settlement was a verbal one, and that when the parties met later the union rejected the contract and asked for 18¢. This the company refused to give and the union went on strike.

Apparently, says Standard, the local leaders found they did not have the authority to ratify the pact without getting the okay from a "policy committee" consisting of CIO oil leaders and other CSPU local leaders.

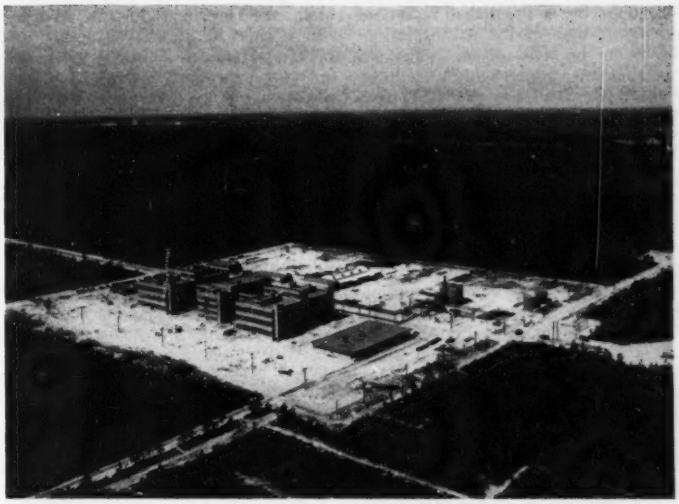
•

National Carbon: National Carbon Co., Niagara Falls, N. Y., has upped its hourly wages by 4¢ in all three plants. This is the maximum allowed under WSB regulations.

•

Isolation Pay Increase: General Electric and the three unions at its Hanford Atomic Energy Works have reached an agreement that will increase daily isolation pay by 42¢. The increase will also apply to weekly-paid non-bargaining unit employees.

The agreement is subject to approval by the unions' rank and file, WSB, and the Atomic Energy Commission.



Stamp on the Countryside

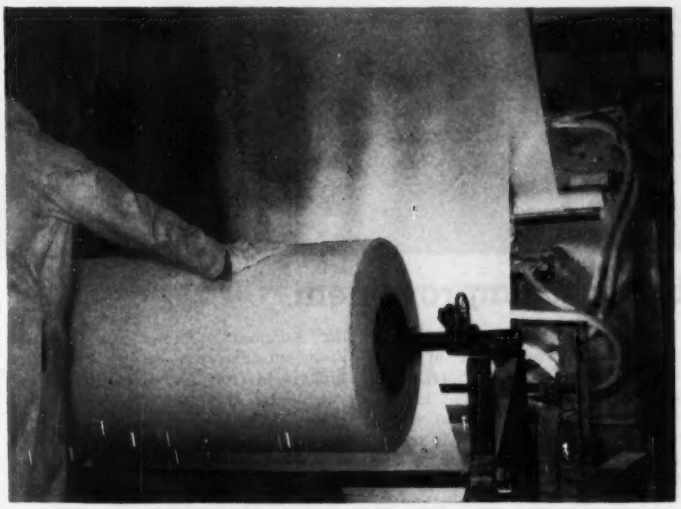
PASTED like a reddish-yellow postage stamp on Ocean County's evergreen blanket, the new vat-dye plant of Ciba States, Ltd., nears completion. Over $5 million has been spent so far on land and buildings to bring a year-round industry to New Jersey's seashore resort area, now subsisting on tourists, cranberries, poultry, and the Lakehurst Naval Air Station (in the background).

Plastic Trade Practices

The Society of the Plastics Industry, Inc., is now preparing a set of voluntary trade practice rules for the purchase and sale of vinyl plastic film.

A Trade Practice Rules Committee is now drawing up a proposed draft of an acceptable sales note agreement which will contain regulations for the following legal procedures: passing of title; storage and insurance; terms of collection and credit; cancellations, rejections and claims; defaults in payment; casualty; compliance with standard and a section on other contingencies.

Included in the agreement draft is



VINYL FILM: Standards to govern quality, trade rules to govern sales.

a provision that any controversy arising under the contract shall be settled by arbitration. If the parties fail to agree on the time, place, method or rules of the arbitration, it shall be held in New York City and be subject to the New York State laws and the rules of the American Arbitration Association. Arbitrators may refer to an approved public testing laboratory for tests to resolve issues, and the tests must be accepted during the arbitration. The AAA has agreed to this arrangement.

Standards Too: In conjunction with the American Society for Testing Materials, the SPI is still in the throes of developing standards for vinyl films. These will serve to define and test the materials as well as maintain quality levels. When available, they should serve as a welcome adjunct to the trade practice rules.

SPI recently apprised the Federal Trade Commission of its intention to establish voluntary trade practice rules; the industry may act under FTC procedures to set up such rules. By using the authority of the FTC, trade practice rules, if established, will have official status. Also, the industry derives the benefit of the advice and council of the Commission. Operation under the Federal Trade Commission does not absolve an industry from legal action, but it does minimize the possibility.

The SPI trade practice rules for vinyl plastic films are being patterned after the textile industry's Worth Street Rules. Cotton, rayon and, to a limited extent, wool industries have operated under the Worth Street Rules since 1930. Since their business transactions have progressed so well under the guidance of their "bible," SPI's shepherds hope their flock will fare as well under their own version.

LEGAL

OPS Rides Again: Two more chemical companies came under the wrath of OPS last week for alleged over-ceiling sales.

Iritox Chemical Co., New York, N. Y., is being sued for treble damages of $220,000 for allegedly selling crude sulfur above ceiling prices. OPS says it set a ceiling for Iritox at $30 a long ton, claims company sold the stuff at from $70 to $110 a ton.

In the first over-ceiling action in the pharmaceutical field, OPS has filed a complaint against the Buffalo Pharmacal Co., Buffalo, N. Y., for $150,900 in treble damages. Overcharges on mail-order pharmaceuticals and physician's supplies amounted to $50,300, according to the Government.

•

Black Market Charged: The National Production Authority, Department of Commerce, has brought stiff charges of alleged black market operations against a New York firm, N. G. Slater Corp., and four of its chief officers. According to NPA the company obtained 200,000 lbs. of polyethylene under a Defense Order priority to make waterproof bags for the Army, and 159,000 lbs. of this was excess not covered by the priority rating. The Government further alleges that the company disposed of 110,000 lbs of this to unauthorized civilian users for non-military purposes between Dec. 1950 and Jan. 1951.

The action will be presented at a public hearing before Hearing Commissioner Philip E. Hoffman in New York.

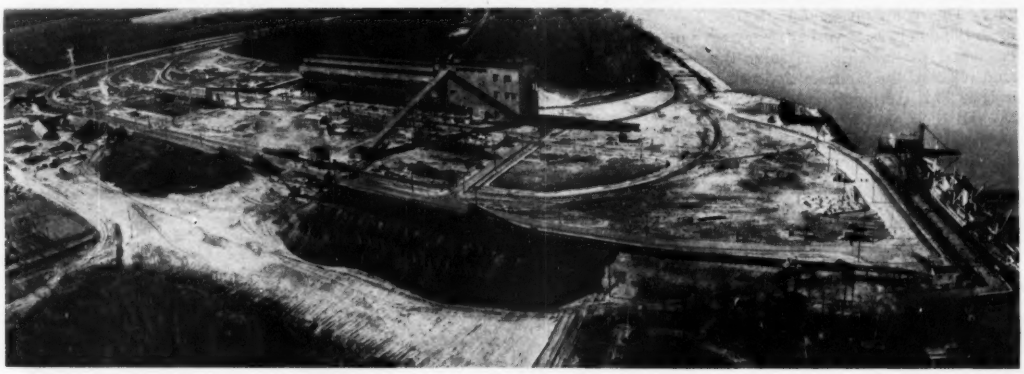
•

Damage Suit: New Wrinkle, Inc., Dayton, Ohio, has filed a suit in U. S. District Court asking for $500,000 in damages for libel and slander and asking for damages for loss of royalties and for alleged violation of anti-trust laws against the Interchemical Corp., in Cincinnati.

The Dayton company charges that Interchemical violated a license concerning a patent held by New Wrinkle on pigment paste. In addition New Wrinkle charges that Interchemical made false statements regarding New Wrinkle itself.

In addition to the $500,000, New Wrinkle is asking for an injunction to restrain Interchemical from making false statements about the company, an order saying Interchemical has violated anti-trust laws with treble damages for such action, and an order requiring compliance with the license.

115-S



Ilmenite Improvement

Second of five electric furnaces now scheduled for installation at Quebec Iron and Titanium's Sorel, Que. facilities is undergoing final testing, and should be in production within six weeks. A third furnace is scheduled to come onstream four or five weeks later.

Key to the whole installation by the Kennecott Copper-New Jersey Zinc subsidiary is electric power, brought in (*top left*), from Shawinigan Water & Power generating facilities. Other raw materials are the ilmenite-hematite ore from the northeast Quebec Lac Tio deposit, docked in at right, and coal, brought in by rail to the storage pile at left.

Result, when combined in the electric furnace: a crude (98%) iron withdrawn in molten state and a high-titanium (72% TiO_2) slag. Products can be transported by rail to the Montreal-Hamilton area or by ship to U. S. East Coast ports.

Among uses for the slag: production of titanium metal, possibly cheaper manufacture of titanium dioxide pigments (*CW, Oct. 20, '51*).

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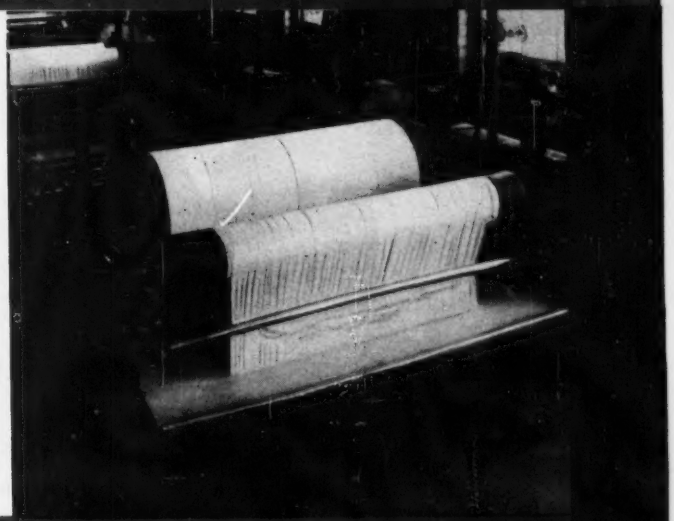

With an eye toward helping profit-conscious dyers achieve more efficient, more dependable dye leveling and dye penetration, The Atlantic Refining Company now offers ULTRAWET 60L.

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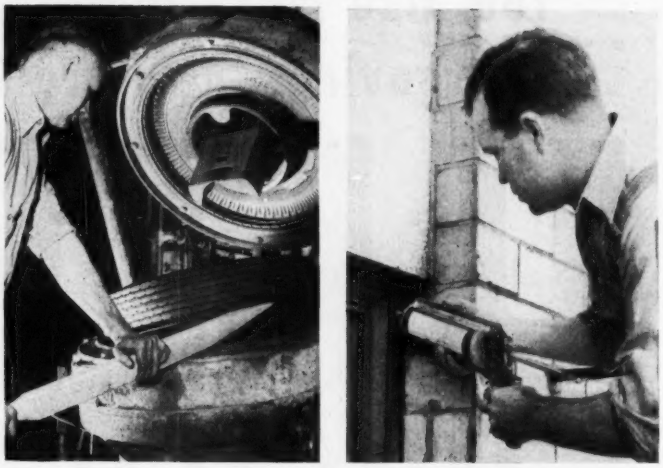

TIRES and CAULKING: A burgeoning market for polybutenes.

Polybutene Potential

While polybutenes have been known for better than 17 years, their large-scale commercialization has come much more recently. Newest factor: Pan-American Southern's 2 million gal./year plant.

Production from Pan-Am's El Dorado, Ark. facilities will be sold by Indoil Chemical, a fellow Standard of Indiana subsidiary, which also produces the "viscous oil" at its Wood River, Ill. plant. Other producer is Standard of California's Oronite Chemical (at Richmond, Calif.).

An indication of the companies' hopes is that annual capacity now totals close to 4.5 million gallons per year—almost double 1951 capacity. This may mean a market surplus for a short time.

Indoil estimates the total non-captive sales at 2.5 million gallons for 1952. If captive use totals one million gallons, another million is still left to be absorbed. This should be only a temporary dislocation since Indoil points to its 800% increase in sales over the past five years.

Oronite and Indoil specialize in different polymerization ranges. Oronite now produces higher viscosity butenes (2,400 to 12,800 Sayboldt seconds at 210°F) and Indoil, the lower spectrum (40 to 3,000). Both compete in the major (3,000) grade.

Where It Goes: Since the suppliers generally cover different grades, their end use patterns should vary. Both agree, however, that caulking and sealing uses are first on the list. PB replaces blown vegetable oils, cuts the over-all cost.

Another large use comes in manufacture of automobile tires and molded rubber products. Polybutenes make up the self-sealant in the two (and soon to be three) brands of puncture-proof tires and tubes.

When used as a plasticizer and extender, PB makes possible a better tensile strength and color for reclaimed and low-grade rubbers.

Polybutenes also go into electronic capacitors, tracing and wax papers, pressure greases, shock absorber fluids and rubber- and asphalt-based paints. Some uses are large, others limited.*

Coming Up: Perhaps the biggest potential use is as a rolling oil for aluminum sheet and foil. At least one big aluminum producer is trying it out as a replacement for mineral oil. If this producer adopts polybutenes, this could become the second largest tonnage use; if the whole industry chooses PB, it could easily be first.

Another potential use comes in polyethylene molding. Laminating a polybutene layer between two of polyethylene prevents the leakage of oily material and also keeps the polyethylene from becoming brittle. Other uses: in adhesive and waterproof formulations. A self-sticking wallpaper is one such end product.

FOREIGN . . . . .

Italy: The Montecatini Co., controlling pivot of 75% of Italy's chemical production and a considerable part of its mining production, has just revealed in its annual report a net profit of $11.8 million for 1951 as against $6.4 million for 1950.

Sulfuric output in 1951 rose from 1950's 829,000 tons to 1,024,000 tons.

* Two drums of polybutene purchased by Frank Holton & Co. for use as trombone oil should last until 2050.

Of the 1.67 million tons of superphosphates produced by Italy, the Montecatini plants supplied 1.2 million tons. The production of primary synthetic nitrogen took a jump from the previous year's 93,000 tons to 119,000 tons for 1951.

Montecatini has hiked its productive capacity in hydrocarbons considerably by its merger with the Società Italia Settentrionale (and its Ferrara factory). During the second half of 1952, a new polythene plant will go into production on a regular schedule.

Merger: Belgium's Union Chimique Belge, S.A. and Solvay & Cie., have taken action to merge their commercial organization in Belgian Congo and Ruanda-Urundi. A new company—to be known as Compagnie Chimique et Industrielle du Congo "Chiminco"—is being set up.

Anti-TB Tablets: The new TB drug—Rimifon, Dutibin, Marsilid, and Nydracid—are about to make their first appearance in Puerto Rican hospitals and clinics for approved experimental purposes. The Puerto Rican Legislative Assembly has appropriated $50,000 for the purchase of the drugs by the Insular Health Dept.

Lubricating Oils: A $22,400,000 lubricating oils plant is the latest addition to Shell Petroleum Co.'s new refinery at Cardon on the Paraguana Peninsula, Northern Venezuela. The plant's estimated annual output of 100,000 tons will be distributed to various countries and will also supplement production from Shell's plants in England. These oils will replace dollar-purchased imports, thereby bolstering sterling area finances.

Potash: A spokesman for the West German potash industry reports that $14-$19 million in capital is required to provide adequate expansion for meeting world potash demand. Last year, 35% of the total potash production—worth almost $30 million—was exported to the United States, Holland, Belgium, Denmark and Japan; industry officials assert that the demand doubled the export.

West Germany now produces 20-25% of the world's potash, compared to the pre-war Reich figure of 50%.

Chemical Exports: The West German economic news agency reports that the nation's coal deficit is threatening to effect considerable cuts in chemicals production. The situation seems to add up like this: West German exports have been declining for some time; products have had to be sold at the lowest possible prices; result: in-

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dustry was forced to restrict its purchases of high-priced imported coal. Now, industry men are hopefully looking for increased allocations of domestic coal to ease the deficit.

For the month of March, however, production of basic chemicals was maintained on the usual level.

KEY CHANGES. . .

John Stevens Jr.: To president, Marathon Corp.

Herman W. Zabel: From director research and development, Chemical Enterprises, Inc., to executive vice president, Roger Williams, Inc.

Nolan B. Sommer: To supervisor, new product development dept., American Cyanamid Co.

Joe Cresce: To plant manager, Nitro, W. Va. plant, Monsanto Chemical Co.

Carl E. Pfeifer: From general superintendent, John F. Queeny plant, Monsanto Chemical Co., to plant manager Muscle Shoals, Ala. operation (Monsanto-operated, Government-owned).

Robert P. Parker: To director, chemical research, American Cyanamid Co.

J. J. Denton: To assistant director, chemical research, American Cyanamid Co.

William H. Rous: To director, American Phenolic Corp.

Vincent C. Henrich: To vice president, Rohm & Haas Co.

Sydney T. Ellis: To vice president, Commercial Solvents Corp.

Henry L. Cox: From general manager, chemical div., to vice president, Corn Products Refining Co.

George T. Collins: From manager of market research, to assistant to the president, Pennsylvania Salt Mfg. Co.

James T. Akehurst: To general superintendent, oil refining operations, Archer-Daniels-Midland Co.

Richard W. KixMiller: To general manager, chemical div., Celanese Corp. of America.

Hubert A. DesMarais: To general sales manager, Pennsylvania Salt Mfg. Co.

Merton Keel: To advertising manager, Shell Chemical Corp.

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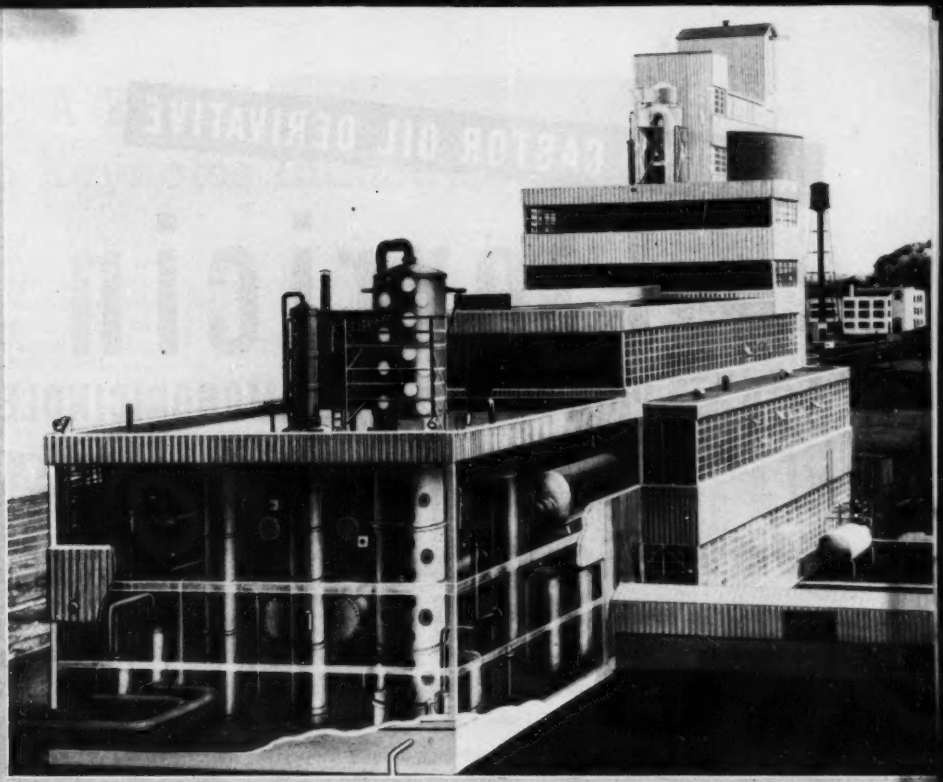

New furfural plant at Omaha showing in the foreground a cutaway view of the chemical process section.

QUAKER OATS NOW PRODUCING MORE FURFURAL

This new furfural plant at Omaha is the latest addition to the production facilities of the Quaker Oats Chemicals Department. The third and largest of its kind, it incorporates the most modern features of engineering design backed by operating experience from the first two plants. Specification furfural was produced within forty-eight hours of starting up the distillation and recovery equipment which was designed and built by Vulcan.

Important to the economics of this new plant is the recovery of substantially all the heat in the digester vapors, utilizing Vulcan's standard design steam generators. This more than supplies the heat required for the refining operation leaving a surplus available for other uses. Improvements in recovery and refining have reduced product losses and impurities to a negligible quantity.

Here is an excellent example of results achieved in chemical process design through the close integration of Vulcan's experience with that of the customer.

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- INITIAL OPERATION SERVICES

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Density @ 25°C, lb./gal.	7.99	Pour Point, °F.	–30
Sp. Gr. @ 25°C/25°C	0.960	Flash Point, COC, °F.	430
Ref. Index @ 25°C	1.4695	Fire Point, COC, °F.	505
Color, Gardner	3	Viscosity, G.H. @ 25°C	K
Volatile Matter, %	1.2	Viscosity, SUS @ 210°F.	60

CHEMICAL PROPERTIES

Acid Value	4
Iodine Value	75
Sap. Value	159

Suggested Applications: Nitrocellulose plasticizer, cosmetics, hydraulic brake fluids, wetting agents.

Samples available upon request

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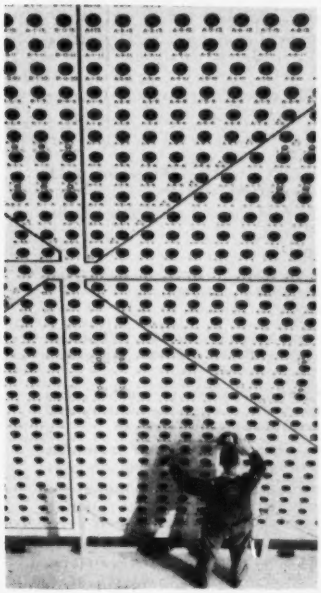
Growth Keynotes Industrial Isotope Use

Last week, nearly six years after the first shipment of reactor-produced isotopes left Oak Ridge, the Atomic Energy Commission opened the books on the isotope program. Its report, "Isotopes . . . A Five-Year Summary of U.S. Distribution," outlines the current status of the field, points up the striking growth of hot-atom application in all phases of industrial research.

Evidence of this growth is found in the five-year distribution pattern. During the first year of the program approximately 1,000 radioisotope shipments were made to some 150 research institutions. Almost 18,000 shipments were dispatched in the subsequent four years.

Another barometer of growth is the publication of scientific papers based on work done with commission-supplied isotopes. At the end of three years of existence 1,800 such papers were listed by the Commission. More than 1,400 additional papers have appeared during the remaining two years.

Of course a good part of this isotope work is medical or pure academic research. But industry's role is unmistakable. On this, and the following two pages, is a rundown of vital isotope research in the chemical process and related industries.



PRODUCING ISOTOPES: No dearth of takers in the process industries.

Company or Institution	Isotope and Project	Status
BASIC CHEMICAL AND ENGINEERING RESEARCH		
Tenn. Valley Author.	P-32. Measure rate of solution equilibrium of fluorapatite in water	U
Tracerlab, Inc.	Mo-99, Ag-110. Study radiochemical analyses for molybdenum and silver	C
Shell Development Co.	Special Irradiation. Study reaction mechanisms of chlorinated hydrocarbons	U
Calif. Inst. of Tech.	I-131. Study transfer of materials in turbulent air streams	U
Calif. Inst. of Tech.	Fe-59. Study rate of corrosion of zinc protected iron by natural waters	U
Univ. of Colorado	Y-91. Determine film thickness in fluid flow and heat transfer across thin liquid films	U
Du Pont Co.	Sr-89, -90. Study chain reactions initiated by beta-radioactive catalysts	C
Univ. of Chicago	H-3, C-14. Mechanism studies of hydrogen exchange, Cannizzaro and polymerization reactions	U
Univ. of Chicago	Cl-36. Study photochemical chlorination and chlorine transfer reactions	U
Univ. of Illinois	I-131, Sr-89. Study of the absorption of hydriodic acid and strontium hydroxide by nylon	U
E. S. Gilfillan, Consultant	Co-60, Sr-89, -90. Study dissipation of electrostatic charge accumulation on machinery	U
Detroit Edison Co.	C-14. Determine chemical nature, mobility and size of ions in liquid hydrocarbons	C
Gen. Aniline & Film Corp.	C-14. Mechanism studies of catalytic ethynylations and acetylene adsorption on catalysts	U
Shell Oil Co.	Co-60. Measuring densities of materials inside pressure vessels by gamma-ray absorption	U
AGRICULTURE		
Univ. of Calif.	S-35. Study of mechanism of control of plant rusts by sulfur treatment	C
Calif. Research Corp.	S-35. Study of retention of sulfur in chemical sprays on plant foliage	C
Univ. of Calif.	S-35. Determine chemical reactions set up by dusting elemental sulfur on citrus trees	C
Colloidal Products Corp.	Y-91. Study efficiency of sticking and spreading compounds in insecticidal dusts	P
Mass. Inst. of Tech.	S-35. Study the metabolism of detergents in experimental animals	U
Univ. of New Hampshire	P-32. Compare relative absorption of phosphorus by apple trees and fruits from foliar sprays and from soil applications of fertilizer	U
CERAMICS		
Pitts. Plate Glass Co.	Service Irradiation. Test possibility of making certain glasses opaque to visible light and transparent to infrared by gamma-ray irradiation	U
Pitts. Plate Glass Co.	Service Irradiation (Cr-51). Determine rate of corrosion of glass	C
Pitts. Plate Glass Co.	Na-24. Test corrosion of refractories by molten glass	C
DETERGENTS AND SURFACE ACTIVE AGENTS		
Calif. Research Corp.	P-32. Study effects of phosphate additives on behavior of surface active agents	C
American Cyanamid Co.	S-35, Na-22. Study physical chemistry of detergents, soaps, wetting agents, frothers, etc.	C

Key: U—under way C—completed P—planned

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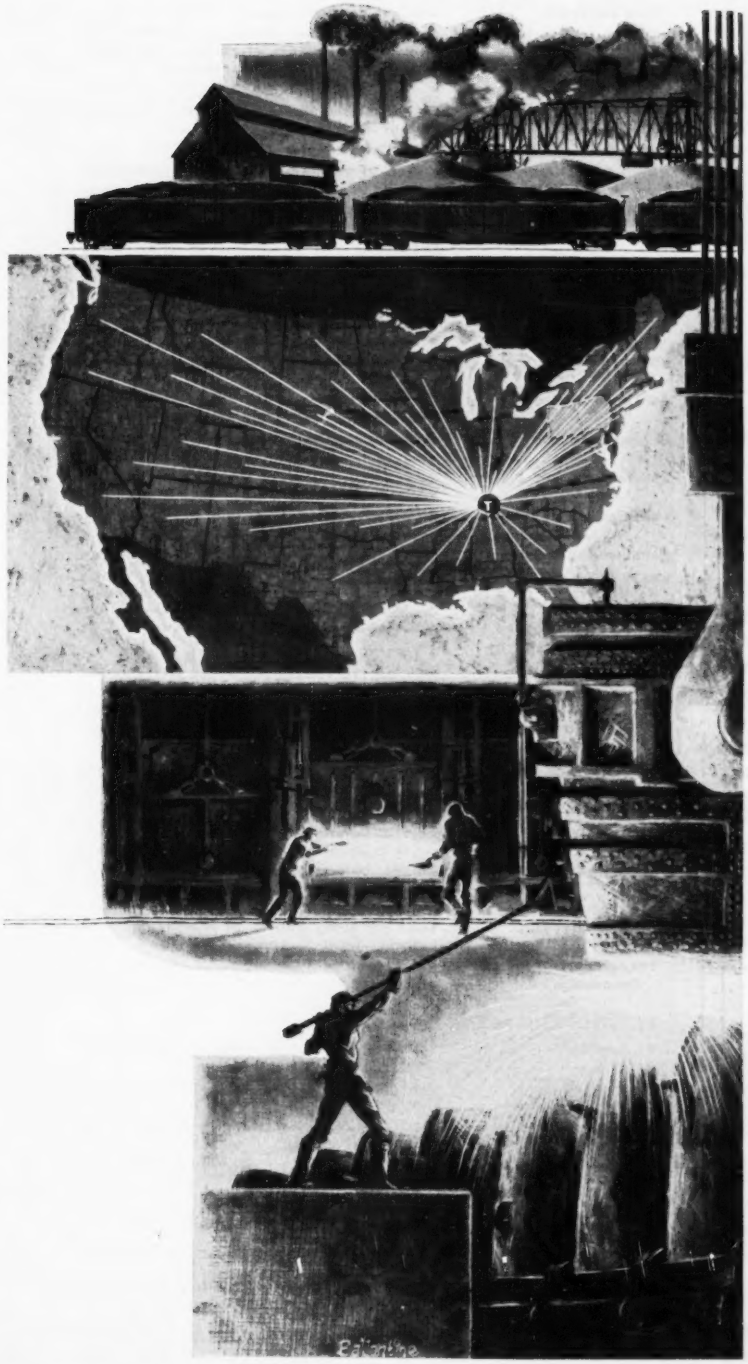
Company or Institution	Isotope and Project	Status
DETERGENTS AND SURFACE ACTIVE AGENTS (continued)		
Lever Brothers Co.	C-14, S-35. Preparation of labeled surface active agents for study of absorption on cloth, etc.	U
University of Mich.	P-32. Study bacteriological efficiency of various laundering procedures and machines	U
Wyandotte Chem. Corp.	P-32, Ca-45, Ag-110, C-14. Detergency research	C
Washington Univ.	C-14. Study of detergency mechanisms with labeled stearic acid and N,N-diisobutylstearamide	C
Procter & Gamble Co.	S-35. Study of detergent behavior during washing with labeled alkyl benzene sulfonate and alkyl sulfate	U
Procter & Gamble Co.	P-32. Study of antibacterial action of detergents with P-32-tagged bacteria	U
Atlantic Refining Co.	Na-24. Study mechanism of washing with detergent and fatty acid soap	U
DYESTUFFS		
American Cyanamid Co.	Co-60. Study wool-dyeing process with labeled metalized dye as tracer	C
Lowell Textile Inst.	S-35. Study structure of polysulfides in an investigation of the theory of sulfur dyeing	U
Textile Research Inst., Princeton	Na-22, S-35, Na-24. Study variables in absorption of labeled sodium salts of dyes on fibers	U
ELECTRICAL AND ELECTRONICS		
Radiation Research Corp.	Sr-90. Investigate properties of insulators under beta-irradiation	U
American Scient. Co.	Sr-89, -90, Mo-99, Ba-140. For calibrating counters and as photoelectric cathode activators	U
P. R. Mallory & Co.	W-185. Study transfer and erosion of materials in electrical contacts	U
Sylvania Electric Products	Sb-125. Study distribution of minute amounts of tin in germanium and correlate with electrical characteristics in a semiconductor	P
Bell Telephone Labs.	Ga-72, As-76, In-114. Study effects of impurities in germanium and develop methods of purifying germanium	U
Radio Corp. of America	Tc 99. Incorporate in representative phosphor host crystals to determine activator function	U
General Electric Co.	Ag-110. Study migration of metallic ions into insulating compounds	U
ISOTOPE PROCESSING		
Tracerlab, Inc.	Y-91, Cl-36, Ag-110, S-35, Fe-59, Co-60, P-32. Processing, resale, training and research	U
Raymond D. Finkle	I-131, P-32. Assay and package for redistribution	P
Central Scient. Co.	Co-60. Resale	U
U.S. Testing Co.	C-14. Preparation of labeled organic compounds for secondary distribution	U
METALLURGY		
Univ. of Denver	Hf-181. Tracer studies of reactions of hafnium and zirconium with an eye to separation techniques	P
Du Pont Co.	P-32. Study of mechanism of organic phosphorus compounds in improving lubricity and reducing corrosion of metal surfaces	C
Naval Research Lab.	Fe-59. Determine solubility of iron in metallic sodium and in sodium-sodium oxide mixtures	U
Anderson Phys. Lab.	Cr-51. Determine mechanism by which potassium dichromate-sodium carbonate solution hardens evaporated aluminum mirrors	C
Iowa State College	Au-198. Study thickness of film deposited by high-temperature vaporization of metallic gold	U

Key: U—under way C—completed P—planned

THERE'S A TOUCH OF TENNESSEE IN PENNSYLVANIA STEEL



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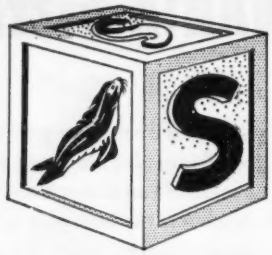

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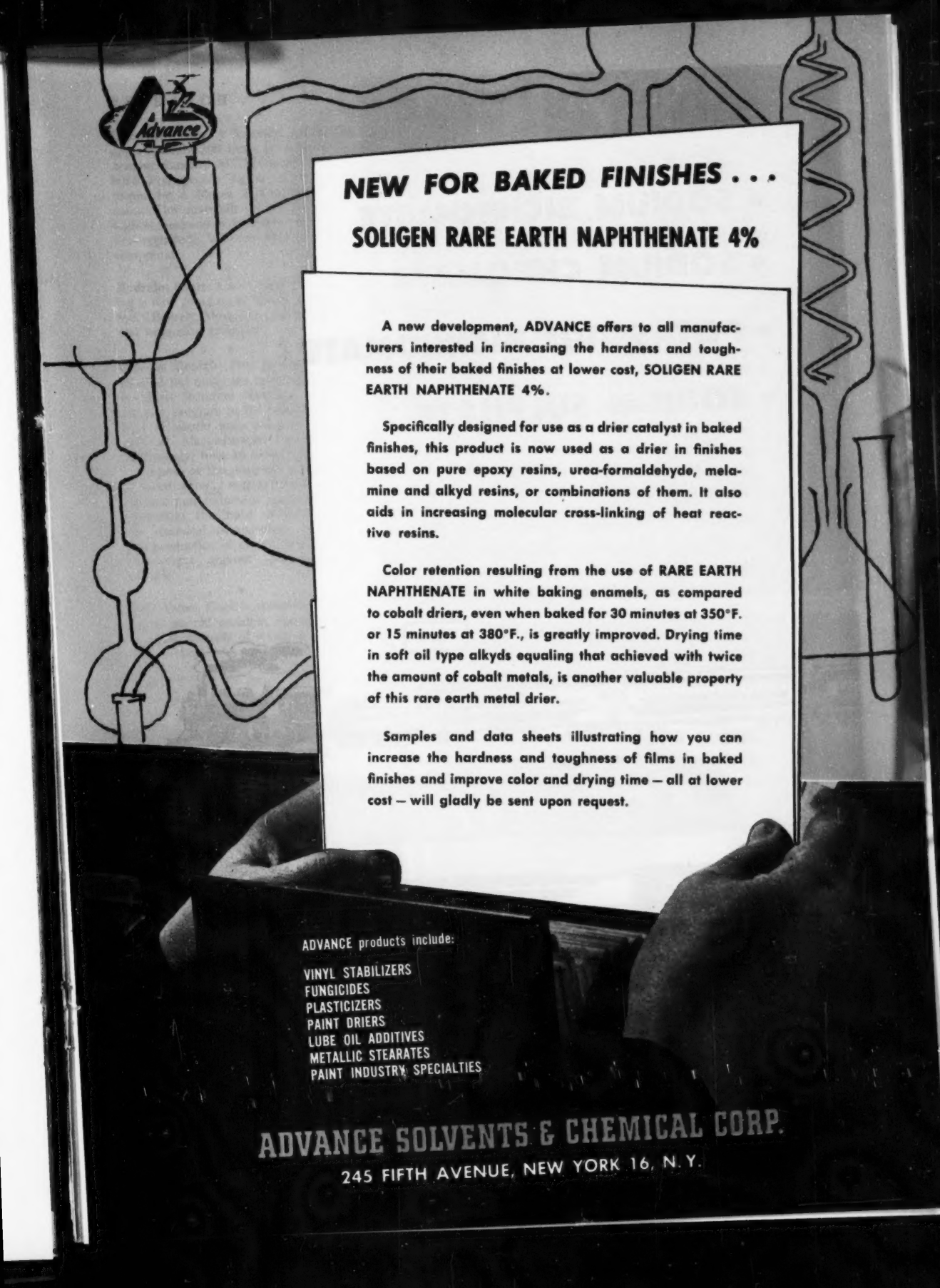
Company or Institution	Isotope and Project	Status
METALLURGY (Continued)		
Ford Motor Co.	S-35. Study distribution of sulfur in steel	U
Case Inst. of Tech.	Co-60. Investigate hydrogen embrittlement in steels and release of absorbed hydrogen by high-intensity gamma-irradiation	U
PETROLEUM		
Shell Development	Fe-59. Determine amount of gear wear under various conditions of lubrication	U
Shell Development	C-14. Detect traces of antioxidants.	U
Shell Oil Co.	Ba-140, Zr-95. Study flow of heavy petroleum products in pipe lines	U
Shell Oil Co.	C-14. Study absorptive and reactive properties of polynuclear aromatics in petroleum mixtures	U
Calif. Research Corp.	S-35. Investigate nature and location of sulfur deposits in diesel engine	C
Calif. Research Corp.	Fe-59. Measure corrosion of oil well liquids with an eye to finding inhibitors to reduce destruction of oil well casings	U
Standard Oil Co. (Ind.)	C-14. Study nature of high-temperature catalytic reactions	U
Oil Field Service Co.	Co-60. Determine intake rates in water injection wells.	U
Texas Co. (N.Y.)	C-14. Mechanism studies of Fischer-Tropsch catalysis.	C
Monsanto Chem. Co.	C-14. Study mechanism of action of lube oil additives.	U
Phillips Pet. Co.	C-14. Study dehydrogenation of methylcyclohexane.	U
Engineering Labs. Inc.	Co-60. Measure drilling mud density by gamma-ray absorption.	U
Houdry Process Corp.	Zr-95. Use of cracking catalysts containing the isotope to study cracking, polymerization and isomerization of hydrocarbons.	U
PHARMACEUTICAL		
Abbott Laboratories	S-35, Au-198, I-131, P-32, Na-24, Cr-51, Ca-45. Synthesis of various labeled biochemicals.	U
Radioactive Products, Inc.	C-14. Synthesis of labeled cholesterone, testosterone, cholesterol, tryptophane, vitamin A, etc.	U
Chas. Pfizer & Co.	P-32. Study metabolism of molds in relation to penicillin production.	U
PHOTOGRAPHY AND GRAPHIC ARTS		
Gen. Aniline & Film Corp.	Ag-110. Determine relative amounts of free silver in developed photographic emulsions.	U
Eastman Kodak Co.	Au-198. Determine amount of photolytic silver produced in normally exposed photographic emulsion.	U
Sun Chemical Corp.	Sr-89,-90. Study transfer of printing ink from printing plate to paper stock.	U
Lithographic Technical Foundation	P-32. Investigate adsorption of solutions containing phosphoric acid on grained metal plates.	U
PLASTICS AND POLYMERS		
Du Pont Co.	S-35, C-14. Study mechanism and role of initiators in vinyl polymerizations.	C
Du Pont Co.	C-14. Determine number and nature of polymer chain end groups.	U
Mass. Inst. of Tech.	C-14. Study polymerization of butadiene by the Alfin catalyst.	U
Dow Chemical Co.	C-14. Study rate of polymerization of styrene.	U
U.S. Rubber Co.	S-35. Study polymerization mechanism of synthetic rubber.	C
Allied Chem. & Dye Corp.	C-14. Kinetic studies of copolymer formation.	U
B. F. Goodrich Co.	S-35. Role of sulfur in vulcanization and polymerization of rubber.	C
Bjorksten Research Labs.	C-14. Study rate of migration of plasticizers in plastics.	U

Key: U—under way C—completed P—planned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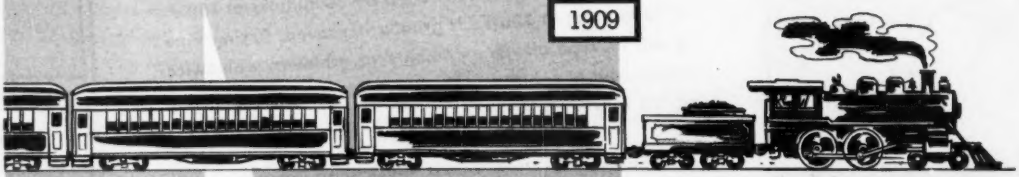

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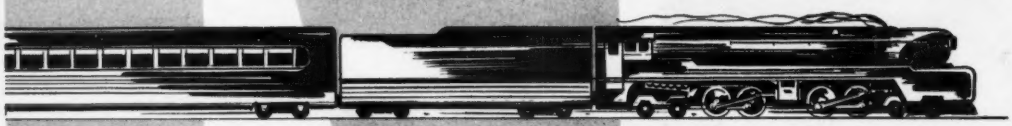

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RESEARCH . . . . . .

Hormone News: A hormone product approximately 300 times as active as Armour standard ACTH has been isolated from pepsin digests of corticotropin by a Merck & Co. research team. The material, which has the highest adrenocorticotropic activity yet reported, behaves like a pure compound.

•

Hydrides Boost: A new research building is now going up at Metal Hydrides Inc. (Beverly, Mass.) as part of a general expansion program.

•

Polymer Confab: Five prominent industrial and university researchers will be guest lecturers during a special summer program in the colloid chemistry of elastic high polymers to be held at Massachusetts Institute of Technology, June 16 to July 5.

Purpose of the program: to present to those actively engaged in the production and industrial application of elastomers, the latest information on the chemical composition, structure and production of elastic, high-molecular-weight organic and inorganic colloids.

•

New Twist: English researchers have solved an old problem, the detection of small amounts of water in alcohol, with a new twist: paper chromatography.

Here's how it's done: The alcohol is allowed to ascend a calibrated paper strip containing two zones; the lower is impregnated with ferrous sulfate, the upper with potassium ferricyanide. The ferrous sulfate eluted by the water carries to the upper zone to give a blue band. Width and intensity of this band indicates the amount of water present.

•

Blessing In Reverse: Researchers at Mt. Sinai Hospital (New York) and University of Minnesota are now making "synthetic" guinea pigs. The animals, normal at the start, are treated with cortisone and X-ray, become susceptible to several diseases which normally attack only humans. Several fungus and virus diseases are being studied with the aid of the new technique.

•

Cold Future: Cryogenics (generation of ultra-low temperatures), now purely a research field, is now trying to prove its industrial worth. According to Arthur D. Little, Inc. (Cambridge, Mass.), experimental results of cryogenic study in the production of extremely hard stainless steel look promising. Other metallurgical and

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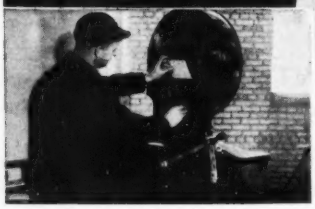

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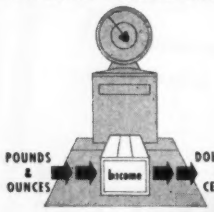

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RESEARCH . . . . . .

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•

Lowdown On Resistance: Koppers Co., Inc. (Pittsburgh) has just established a fellowship at University of Pittsburgh to determine whether certain strains of fungi develop resistance to wood preservatives in commercial use.

•

New "A" Synthesis: A new synthesis of vitamin A from readily available cyclohexanone is the news from Glaxo Laboratories (Middlesex, England). All established syntheses are based on beta-ionone, a component of oil of lemongrass. Interest sparker: Beta-ionone sells for $5.40 a pound; cyclohexanone for 25¢.

Here's the new British synthesis in a nutshell:

Cyclohexanone is methylated and treated with sodium acetylide in liquid ammonia to form 1-ethynyl-2,2,6-trimethylcyclohexanol. This is condensed with crotonylideneacetone and 6-methylocta-3,5,7-trien-2-one, yielding 18 and 20-carbon glycols respectively.

The glycols are rearranged and their triple bonds selectively reduced with lithium aluminum hydride. Dehydration of the reduced 20-carbon glycol gives vitamin A acetate. Oxidation of the reduced 18-carbon glycol, followed by dehydration, yields an 18-carbon ketone which is converted to vitamin A by a published method.

•

Monomer Debut: American Monomer Corp. (Leominster, Mass.) is now offering n-butyl acrylate on a commercial basis. It's sold as a water-white liquid inhibited with 0.05% hydroquinone. Uses: in the production of polymers and copolymers for low-temperature rubbers, adhesives, coatings, etc.; as an intermediate in the manufacture of plasticizers, dyes and pharmaceuticals.

•

Tracer Firsts: Radioactive Products, Inc. (see p 34) of Detroit, reports the availability of five C-14 tracer compounds, three of which are brand-new commercial products.

The three newcomers: ring-labeled cholesterone, cholesterol and testosterone, with specific activities of five microcuries per milligram. Methyl iodide and methanol (with specific activities of two millicuries per millimole) complete the quintet.

•

Addition: United States Testing Co. (Hoboken, N. J.) has installed a new psychometric service to cope with taste, odor and other subjective product problems. Veteran psychologist Dean Foster heads the division.

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How a network power system prevents shut downs in this process plant

In the new Lever Brothers' Los Angeles plant, which produces soaps, detergents and edible oils, many of the processes are continuous and power stoppages would be extremely costly. So Bechtel Corp., the engineers and constructors, and Westinghouse applied a very advanced type of power system, a "secondary network", that's just about emergency-proof. Here are a few of the nontechnical highlights.

Substations tied together in network

This system follows the best modern practice of having power substations spotted throughout the plant—each one serving its own area. In addition however, the substations are tied together with emergency cross connections. If there's trouble in any substation, its part of the plant is immediately and automatically served through the neighboring units without even a *momentary* interruption.

No stand-by diesel-generator needed

Power enters the plant through either of two main lines from the utility company. If one line should develop a "fault", the automatic throw-over equipment switches to the other line. This system has such high reliability that no stand-by diesel-generator is needed.

System expanded easily as plant grows

Another important feature of this system is the ease with which additional load expansion can be handled. An increase of 40% in capacity is possible without disturbing the present system.

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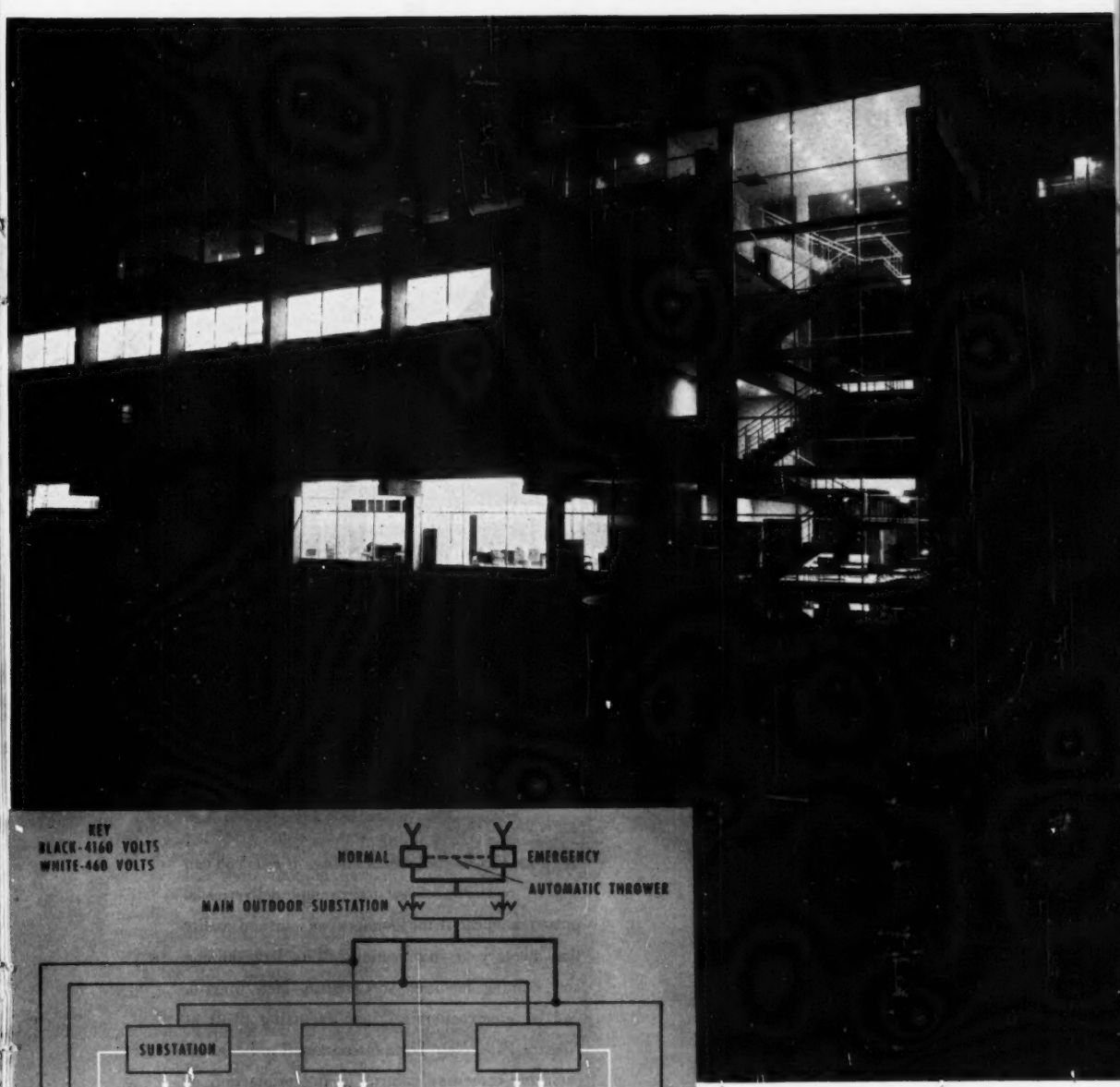

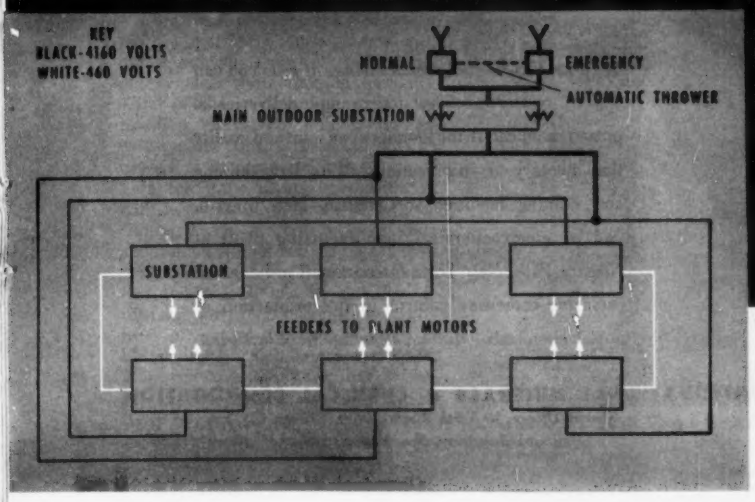

Lever Brothers new Los Angeles process plant has an advanced power system—the "secondary network". Triple feeders and substation cross connections give the system exceptional reliability and make future expansion easy.

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and will turn out annually . . .			
COBALT:	2,000 tons	700 tons	150 tons
NICKEL:		900 tons	8,500 tons
COPPER:		700 tons	1,000 tons
AMMONIUM SULFATE:		7,500 tons	70,000 tons
They'll be on stream by . . .	July, 1952	Mid-1953	Fall, 1953

Smelting By-Passed in Metals Revolution

Three companies will spend $25 million on plants to use Chemico's chemical process for making metals.

Experts think that, as far as applications are concerned, the surface has barely been scratched.

Big feature: cut in processing costs—maybe half for copper, even more for other metals.

Some staid, relatively static segments of the mining and ore processing industry are due for a jolt this week as Major General Bill Porter (president, Chemical Construction Corp.) lifts the shroud of secrecy that has enveloped his company's much-talked-about chemical process for making metals. Big economies that result mean that it will be possible to mine large deposits of low-grade ores previously considered unworkable.

Chemico's process is based on a leach—either acid or ammonia—and differs radically from the usual roasting or electrolytic refining methods. Three plants—representing investments totalling over $25 million—are already under construction, will put the process to its commercial test.

In the three plants, raw materials will be sulfide ores. Products will be copper, nickel and cobalt; by-product ammonium sulfate will pay a fat dividend in two of them. Porter points out that the process can be modified to turn out pure (99.9%) copper from any form of copper scrap, brass scrap or blister copper. Extractions are almost 100% effective and the product passes all tests for oxygen-free, high-conductivity electrolytic copper.

What's more, the consensus among experts is that, as far as applications are concerned, the surface has barely been scratched. While working on the process, for instance, Chemico engineers came up with a method for separating certain metallic oxides. Using the technique to get a metallurgical grade manganese from low-grade domestic ores is one possibility. Other good bets: separation of titania, alumina and other ores.

GENERAL PORTER: Time lag cut from months to hours.

Cheaper by Half: Since operating costs frequently don't live up to advance estimates and since each plant must be tailored to fit individual requirements, Porter is reluctant to give blanket figures on economies that can be derived from the use of the new process. But this much is certain: Chemico engineers think that very often savings in three years may be enough to pay for complete conversion from old smelting and refining methods to the new process.

In the case of copper, the trade belief is that Chemico figures it can cut plant investment and operating costs by more than half. And the chances are that savings for other metals may be even more emphatic.

Says Porter: "Material requirements are so moderate in quantity and reasonable in costs that efficiently and compactly designed plants may, in many cases, be built at the mine site. This would drastically cut transportation costs—a sizable factor in current metal prices."

As Porter figures it, the refinery at the mine site will also eliminate important time lags in production. He says that time between mining and marketing the metal can be figured in terms of hours rather than months.

No Roasting: Pending action on all applications by the Patent Office, Porter is also unwilling to discuss process details. Essentially it's a leach, followed by reduction. In the three plants abuilding, ore will be concentrated by conventional flotation procedures, then

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ROBERTS AND McGAULEY: The idea was born, the expert hired.

introduced with acid or ammonia into an autoclave in the form of a slurry. Metals will be recovered by suitable reducing agents. By varying the conditions of treatment, individual metals can be separated as pure powders.

As an example, Howe Sound will use a five-step process at its Salt Lake City refinery. After leaching with ammonia, the material will be filtered and the gangue, arsenic and iron discarded. Next step is cementation (substitution of one metal for another in salts). In this step, copper is removed and discarded because it is not present in economically recoverable quantities. The material is then reduced from the ammoniacal solution. Nickel and cobalt precipitate as a mixture (95% cobalt, 5% nickel) and are filtered off. Because a ready market exists for the mixture, Howe Sound will not separate the two metals.

Three and One: Raw material for the refinery will be 35% cobalt concentrates from Howe Sound's Blackbird Mines, near Cobalt, Idaho. Treating 35 tons a day, the plant will have an annual production of 2,000 tons—more than 40% of the world's present supply.

National Lead will use a variation on the same process at its $5 million Fredericktown (Mo.) refinery. There the company will process 50 tons of ore a day, will turn out 700 tons of cobalt, 900 tons of nickel, 700 tons of copper and 7,500 tons of ammonium sulfate.

At Edmonton, Alberta, Sherritt Gordon is putting its faith in the process to the tune of a $17 million nickel refinery. Taking ore from its Lyn Lake holdings in Manitoba, it will produce 8,500 tons of nickel yearly, along with 1,000 tons of copper, 150 tons of cobalt plus 70,000 tons of ammonium sulfate.

In addition, Chemico intends extensive piloting of the manganese extraction process with Chemetals Corp. The latter was formed in 1950 by Bill Hayden and a group of men to promote development of the process. It has rights to the copper scrap and manganese applications, will split its take with Chemico.

Hayden reports that if the Government contracts for the output, Ucoa, Inc.* will put $30 million in plant and operating capital to produce a metallurgical grade manganese oxide (Mn_3O_4,hausmannite) from low-grade ores in the Cuyuna area of Minnesota. If the Government says "yes" and piloting proves successful, Ucoa will build a plant to produce a minimum 10 million long ton units of manganese oxide sinter yearly.

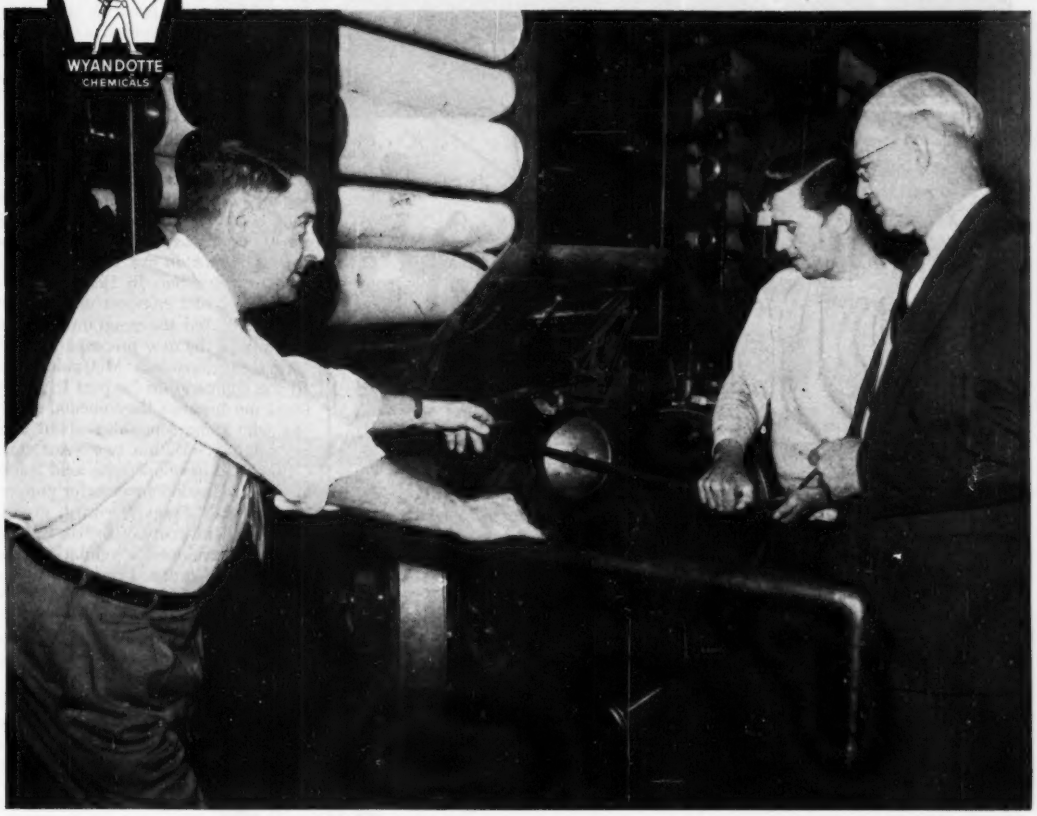
Negotiations with the Government are currently under way, says Hayden, and the outcome should be known shortly. Although the plant would not produce manganese that could compete with the imported variety in normal times, the strategic value of the metal gives the venture a good chance of success.

A Team Affair: Porter names three men from Chemico who played key roles in working out the process: Ed Roberts, chief engineer and vice president, Pat McGauley, chief of the

* Utah Construction and Associates.

WYANDOTTE CHEMICALS

Purecal—a GR-S and dollar-saver



William M. Moser (left) and Ed Hillendahl, Pacific Tire and Rubber Company executives, inspect GR-S carcass stock containing Wyandotte PURECAL.

"Wyandotte Purecal T improves over-all quality in GR-S tire stocks"

—William M. Moser, *Development Mgr.*

Pacific Tire and Rubber Company executive tells how this Wyandotte product gives higher tear resistance and good cord adhesion in GR-S carcass stocks:

"We demand the highest quality in our products," says Mr. William M. Moser, development manager. "A great deal of our research and development work is devoted to continual improvement of quality and maintenance of high standards.

"Our tests and subsequent experience, using Wyandotte PURECAL* T in GR-S carcass stock as a reinforcing filler, have shown PURECAL to be an exceptionally fine aid to quality. With it in our carcass stock, we get higher tear resistance, good cord adhesion between plies, excellent building tack, and improved quality of GR-S stock.

"Using PURECAL in our processing, we can run 100% GR-S stock on our 4-roll calender without the necessity of regrinding the rolls."

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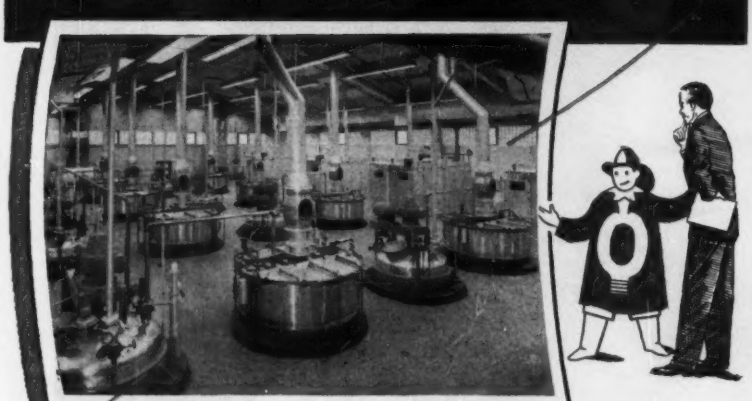

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Metals Department, and Ludwig Christman of the research labs of the parent company, American Cyanamid. But a deserving nod must go to Frank Forward of Sherritt Gordon and engineers of National Lead and other companies concerned.

Actually, the whole idea started with Roberts back in 1933 when he was working on a plant near the small town of Figlini, Italy. Roberts noticed that, under certain conditions, almost pure copper was deposited around the carbon monoxide exit of an ammonia recovery scrubber. In 1945, when he was made chief engineer of Chemico, he inaugurated the program that was to result in the new process.

Shortly afterwards, McGauley joined the company; as he puts it: "They hired me because they needed someone who knew something about copper refining." Within two years, McGauley had developed the acid leaching and reduction process for copper.

Meanwhile Frank Forward, professor at the University of British Columbia, had developed a similar process for Sherritt Gordon. Forward was using an ammonia leach on nickel ores to produce nickel ammonium sulfate. His idea was to drive off the ammonia to form nickel sulfate which could be roasted to produce nickel.

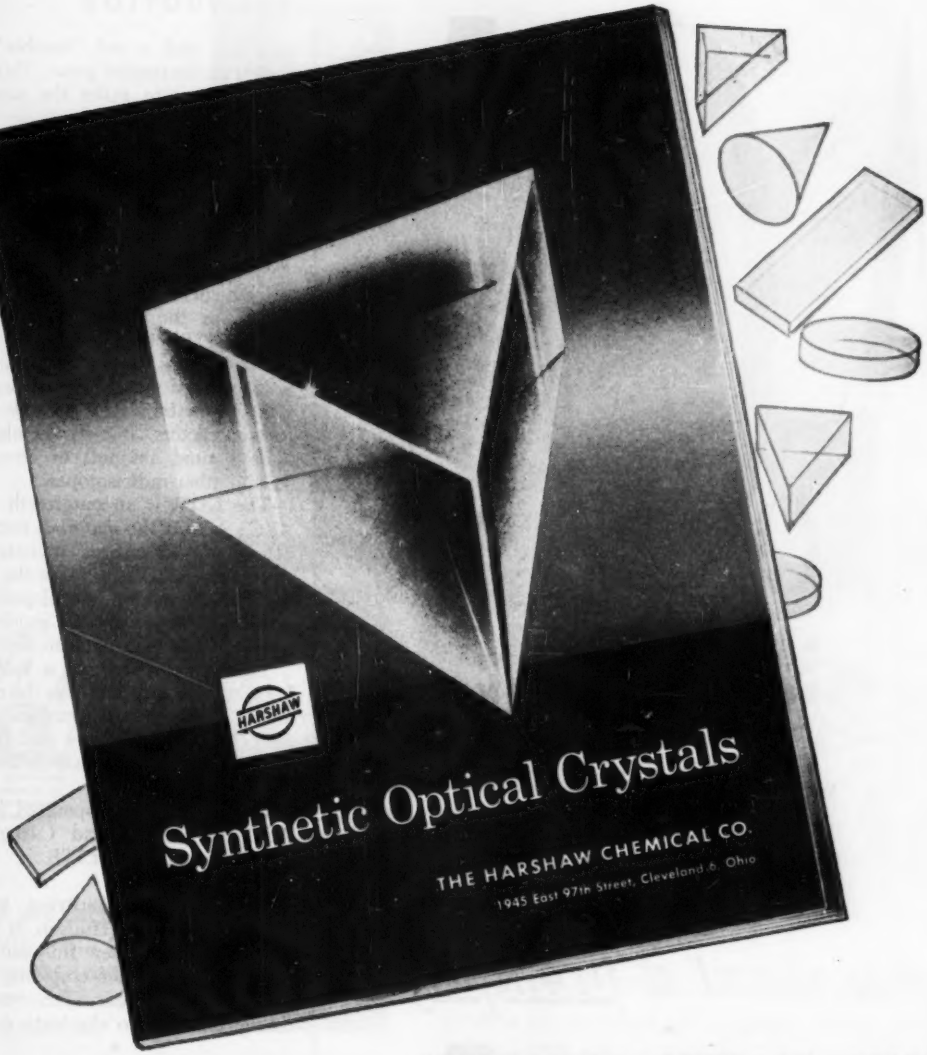
Sherritt Gordon asked Chemico for advice on Forward's process; the two companies realized the advantages that could result from a combination of the two, signed a contract for joint development. With an assist from Chemico, Sherritt Gordon built a pilot plant in Ottawa to work on the leaching angle and Chemico piloted the nickel reduction at Linden (N.J.).

Exit "Explosions"

Schenley Distillers, Inc. has worked out a scheme to eliminate fire and explosion hazards which sometimes occur during their distillations.

While distilling beer, whiskey or alcohol, excess pressures occasionally build up in the systems. Mechanical relief devices, used in the past, were ruptured to relieve the pressure, but the escaping flammable gas filled the room.

To prevent this danger, Schenley engineers worked out an interesting system. Seal pots (water-filled pressure relief vessels) were designed to include a Fenwal (Ashland, Mass.) Detect-A-Fire unit and a 6-inch copper duct to carry escaping vapors outside the building. The hot vapors activate the Detect-A-Fire unit which closes a circuit. A bell rings immediately, a green "safe-operating" light



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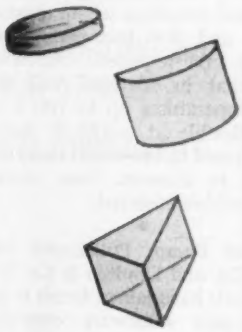

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goes off and a red "trouble" light flashes on the control panel. This alerts the operator to make the necessary repairs.

Schenley apparently thinks this venting and alarm system is a good deal, has installed it in 21 distilleries in the U.S. and Canada.

Test Reactor Grows Up

An advanced-design nuclear reactor, known as the low-intensity test reactor (LITR), is now in operation at the Oak Ridge National Laboratory. It is to be used mainly to evaluate construction materials for possible use in future reactors. But it will also produce limited amounts of chromium-51 and other radioisotopes.

The LITR is an outgrowth of the AEC's Arco, Idaho materials testing reactor. It "went critical" (maintained a sustained chain reaction) in the spring of 1950, was finally developed to its present form—a versatile model with exceptionally high neutron densities.

The "new" (two and a half story high) reactor uses water as the coolant and U-235-enriched uranium as the fuel. The core structure and fuel arrangement are still classified. The cost: $1,000,000.

ORNL, which is operated for the AEC by Carbide and Carbon, designed and built the LITR.

•

Automatic Drum-Emptying System: Gifford-Wood Co. (Hudson, N.Y.) has just introduced a new fully-automatic conveyor system for emptying up to 40 drums per hour. The system is totally enclosed to eliminate dust.

•

Silicone Rubber Compound: A new silicone rubber impregnated Fiberglas, ArcoSil #2184, has just been developed by Arrowhead Rubber Co. (Downey, Cal.). It is useful for ducting, sleeves and couplings where resistance to high and low temperatures and pressures is required. Arrowhead claims that its material will withstand temperatures up to 700 F and remain flexible at —125 F. ArcoSil #2184 is said to be several times more resistant to abrasion than previous silicone rubber material.

•

Stoneware Pump: Pulsometer Engineering Co. and Doulton & Co. (both of England) have joined forces to produce a new stoneware centrifugal pump. The new pump was designed to handle acid food products such as fruit juices and vinegar. Pulsometer-Doulton's pump is made in three models covering deliveries of 1 to 450 gallons a minute at heads up to 140 feet.

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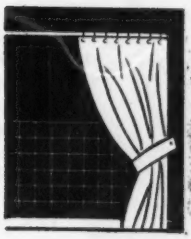

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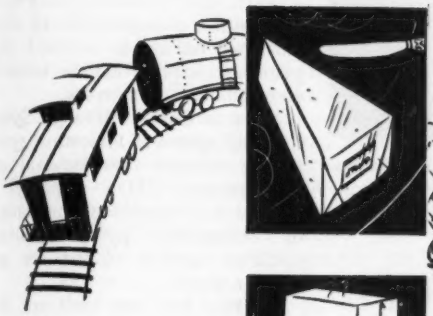

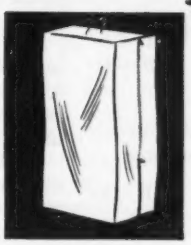

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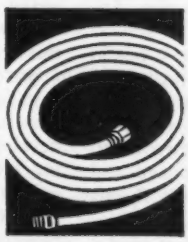

Acetyl Tributyl Citrate is a clear, water-white liquid, soluble in most organic solvents. It has a high boiling point—172-4°C at 1 mm Hg—and is insoluble in water. This plasticizer is highly compatible with vinyl polymers and copolymers. In vinyl compounds, its use results in improved heat and light stability. Extensive tests have proved it to have a very low order of toxicity, making it ideal as a plasticizer for food packaging material.

For additional information about Acetyl Tributyl Citrate and other Pfizer Citrate Plasticizers write for the booklet "Pfizer Citric Acid Esters as Plasticizers."

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SYSTEMICS FOR CITRUS: Self-defense for trees and plants with new insecticides.

Systox Story

New USDA-cleared systemic insecticide, Systox, was introduced commercially last week by the Pittsburgh Agricultural Chemical Company.

USDA has approved Systox for use on cotton, in control of aphids and mites. PACC sees $1 million annual sales here.

Approval for use on other plants, already well researched, is hoped for by summer's end.

Last week, in the garden-like west ballroom of the Waldorf Astoria, the Pittsburgh Agricultural Chemical Co. (div. Pittsburgh Coke and Chemical) introduced Systox, its now-commercial systemic insecticide.

Systox is the first systemic insecticide (*CW, Feb. 24, '51*) to receive the U.S. Dept. of Agriculture okay for control of aphids and mites on cotton. And PACC eyes a sales potential of about a $1 million yearly to cotton growers; hopes the USDA will permit use on other plants—roses, vegetables, tobacco—by the summer's end.

Chemically, Systox is an organo phosphate ester, O, O-diethyl-O-2-(ethylmercapto)-ethyl thiophosphate. Developed by Dr. Gerhard Schrader, of Farbenfabriken Bayer, Germany, it was patented last October (U.S. Patent 2,571,989); Chemagro (jointly formed by Geary Chemical and Pittsburgh Coke) has the U.S. license and the trademarked name.

Double Defense: PACC and Chemagro have been supplying Systox to experimenters for more than three years, find it appears to work like this: Applied to the seed, sprayed on foliage (as will be the use on cotton), put in fertilizers, in irrigation water, or injected in the root soil, it is absorbed by the plant. By a process termed "translocation," it spreads throughout the plant, rendering the foliage and plant fluids toxic to insects. Systox packs a double punch; it is both a stomach poison and a contact poison to the nervous system of the pest.

PACC claims a number of advantages for the systemic sort of pesticide. It won't wash or blow off the treated plant; it has long residual action (up to 40 day protection has been noted on some plants). It appears to concentrate in new growth, which needs more protection. It seems harmless to insects preying on the aphids and mites, and does not affect honeybees.

For treatment of citrus trees and timber, direct injection of the diluted chemical is advised (see cut).

As recommended for the cotton grower now, Systox will cost him about $8/year/acre, present test results show. PACC is advising it mainly for the producer who gets about 3 bales of cotton per acre; price to the grower is about $32 per gallon for the concentrate, which contains 4 lbs. of the pure chemical in an emulsifier.

Handle With Care: Although not for the amateur to handle, Systox is roughly no more hazardous than the widely used parathion sprays. Overalls, goggles, and mask are required for applying the spray.

Once the systemic has been applied, and absorbed throughout the plant, it provides a sort of self defense for it. This plant toxicity lasts until the enzymic action within the plant breaks it down. PACC claims Systox is effective until a concentration of about 1 part per million is reached in the plant, and further that the breakdown endproducts are harmless.

More to Come: Although Systox is the only approved-for-cotton systemic in this country now, several others may receive USDA approval also. Monsanto is supplying small amounts of octamethyl pyrophosphoramide (OMPA), already okay'd for greenhouse aerosols.

OMPA's key uses now are in the aerosols, but Monsanto is hoping for USDA okays its use on cotton and ornamentals shortly. Pilot price is about $6.50 per pound now.

Under the far more general term of chemotherapeutics are several compounds which might be classed as systemics. An example is the new Dutch Elm disease treatment, 2-methylcarboxymercaptobenzothiazole (*CW, Feb. 2*); researchers aren't sure just how this fungicide works.

Switch for PCC? Pittsburgh Agricultural Chemical and Chemagro now have licenses for three of the Bayer-developed insecticides. That this perking interest in agricultural chemicals indicates a trend of emphasis for Pittsburg Coke and Chemical might be gleaned from PCC's president Richard Marshall's words that the major increase of PCC sales revenue in the future will likely come from the chemicals division.

If Systox shows up anywhere as well as PACC expects it to, and USDA permits are received for the multitude of other plant uses now quite well researched, PACC is in on the ground floor of an agricultural chemical giant.

Bayer has retained European sales and manufacturing rights to Systox; PACC has the US and Canadian territory. And in this country last year,

aphid and mite damage to cotton totaled a staggering multimillion dollar amount; growers are eager for chemicals that can halt this loss.

Easy on the Nose

Odorless paints are one of the major new developments in paint formulation. Though sales figures on such paints aren't available, their importance can be judged from this spring's activity: At least two firms are offering complete lines—flats, semiglosses, and glosses—of the odorless sort, two companies plan to start manufacture of the odorless solvents, and one outfit is now marketing an odor-free vehicle. One of the most recent products in the field is Sapolin Paint's (Brooklyn) Subdued Lustre semiglosses. Sapolin still isn't producing a full line of this new type paint, but several companies, Keystone (Brooklyn) and F. O. Pierce (Long Island City, N. Y.) to name two, market the complete line.

And to supply the odorless solvents —now in tight supply—Shell Oil and Sinclair hope to get into production by late summer. Phillips and Socony-Vacuum are among those already turning out the scent-free paraffinnics.

Reichhold Chemicals introduced its Wallkyd vehicles last February; these odorless vehicles, sold in quantity lots as low as 13-14¢ per pound, enable the formulator who can't get solvents, or who hasn't developed necessary techniques for cooking his film-formers, to get in the booming field fast. The price for the vehicle is about as low as most formulators can duplicate, and presumably, all that the paint maker needs do is add pigment to get a semigloss, odorless paint. Reichhold, moreover, says there is no shortage of its Wallkyd.

Perfumery Problems: To produce an odorless paint, formulators must dispose of both the solvent and the film-former (often linseed or soya oil) odor. Masking the odors is one approach, has been successful in lighter fluids, for instance.

But apart from this, some new solvents had to be found that don't have the objectionable smell. During the last war, iso-paraffinnics in the C_{11}-C_{14} range were found to have odorless properties. These solvents were made by alkylating C_4 and C_5 hydrocarbons; were produced in the same units producing aviation fuels. No trace of the napthalenic or benzenic odors could be noted in these compounds.

Paint makers who tried to substitute these new compounds directly for conventional solvents ran into trouble. Although they had little more odor than water, they had only about half the solvent properties of mineral spirits.

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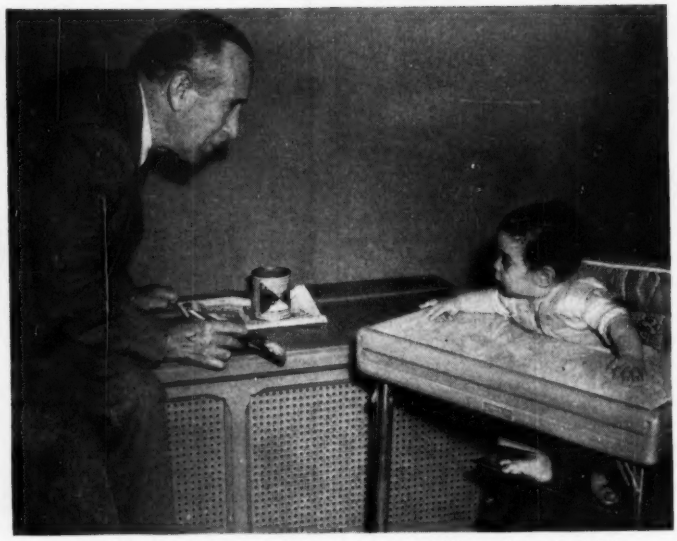


ODORLESS PAINTS: A booming baby in the billion dollar paint field.

In addition to reformulating to allow for this lower solvent power, manufacturers had to eliminate the disagreeable odors of the film-formers. New methods had to be worked out for cooking these resins to get rid of the stench.

One by One: Flat paints, with high pigment content in relation to the vehicle content, were the first to be offered as "odorless." Semiglosses, with more vehicle and less pigment, were developed a short time later. Odorless enamels, which have an even smaller percentage of pigment, are still in the research stage for many companies. Some that are on the market might better be termed free from "paint type odors" rather than odorless.

Perhaps the first to market an odorless paint was Keystone, which sold a scentless flat white in 1949. In February of this year, Keystone also started selling semiglosses, enamels, and varnishes with odorless formulations.

At Home in the House: Once the paint user found out about the advantages of the new paints, there was little excuse for paint companies not to produce them. The increased production cost, which was at one time the main reason offered for not making odorless paints, no longer carries much weight.

Freedom from the sometimes nauseous fumes of ordinary paint has led to widespread acceptance of odorless paints by householders, hospital personnel, and store owners.

In brightening up hospitals, officials find they don't need to close down when new painting is being done. Housewives redecorating for spring appreciate that fumes from the job don't linger in the home for weeks. And store owners can paint without fear that products in open storage or in open-top freezers will end up by tasting like they had been dipped in linseed oil and turpentine.

Just how large the sales of odorless paint will be is hard to predict. Even makers of the cheaper, ordinary paints admit that the odorless types are giving them stiff competition. Sherwin-Williams and Glidden, neither now in the field, hint strongly that their own types are on the way soon. And one solvent supplier sees a bright future, in which 100 million gallons of his solvent go into this outlet per year.

•

Ag School Aid: Columbia-Southern Chemical Corp., (div. Pittsburgh Plate Glass) will grant aid to some 30 schools this year, for research on various agricultural chemicals made from Columbia-Southern's basic chemicals.

•

Tenters in Trees: USDA reports heavy infestation this year of forest tent caterpillars in several areas of the U.S. Damage of the defoliating caterpillars can be reduced by use of DDT sprays.

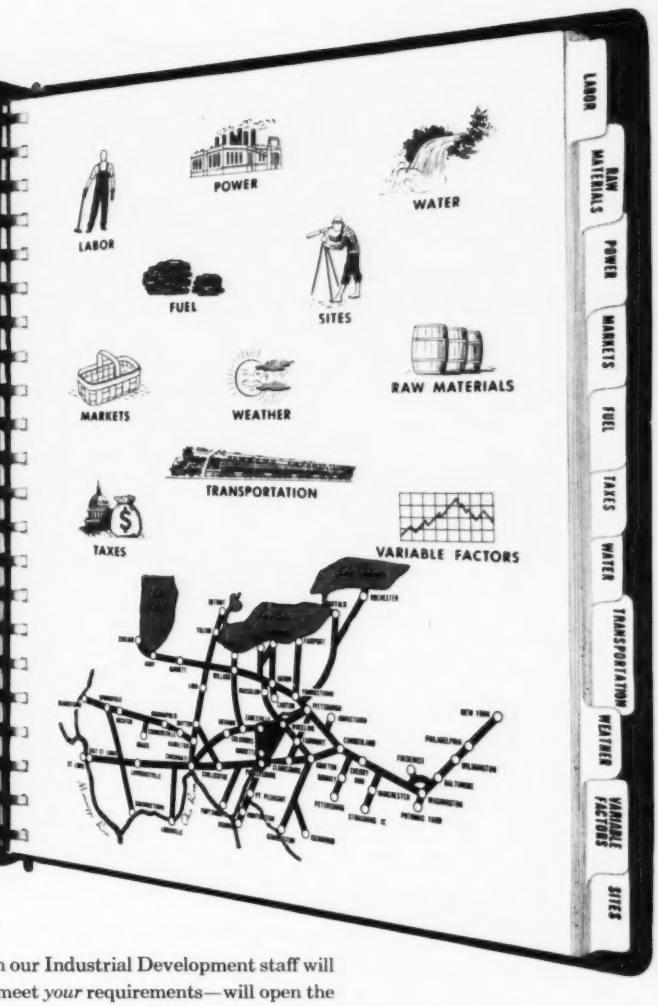
•

New Bottles: Elmer E. Mills Corp. (Chicago) is selling a new series of polyethylene bottles. Called Millsplastic Oblongs, the new containers are available in colors in addition to white.

•

Glamorene vs Glamur: Second stage of the squabble between Hosid Products (Syracuse, N.Y.) and Masbach, Inc.

Your Open Door to the Rich Resources of the "American Ruhr"



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HERCULES POWDER COMPANY Cellulose Products Dept., 992 Market St., Wilmington 99, Del.

GC52-2

(New York) over the use of the name Glamorene (Hosid claims prior use of the word Glamur in its title; wants to prevent Masbach from selling Glamorene in New York State): Now Masbach has filed prior usage papers with Federal Judge James T. Foley in the northern New York federal court district, as a counter-suit against Hosid's suit in the New York State supreme court.

•

Chlorophyllin In: Several of the latest users of chlorophyll in their products are: Block Drug Co. (Jersey City, N.J.), now putting chlorophyll in its Ammident dentifrice, which is already ammoniated.

Von Schrader Mfg. Co. (Racine, Wis.), now testing Deterg-ene, a non-liquid rug cleaner with chlorophyll in it, in several markets.

Paradize Products Corp. (Fairview, N.J.), just out nationally with a moth repellent crystal of paradichloro-benzene and chlorophyll.

•

Synthetic Wax Beads: Acrawax C, a high melting point synthetic wax produced by Glyco Products Co., Inc. (Brooklyn), is now available in bead form. There is no price increase for new wax form.

•

Antiseptic Cloth: Sterwin Chemicals, Inc. (New York) is now selling Rocloth, a sanitizing cloth treated with the Sterwin germicide, Roccal. After immersion in warm water, the cloth can be used to swab footwear, goggles, etc.

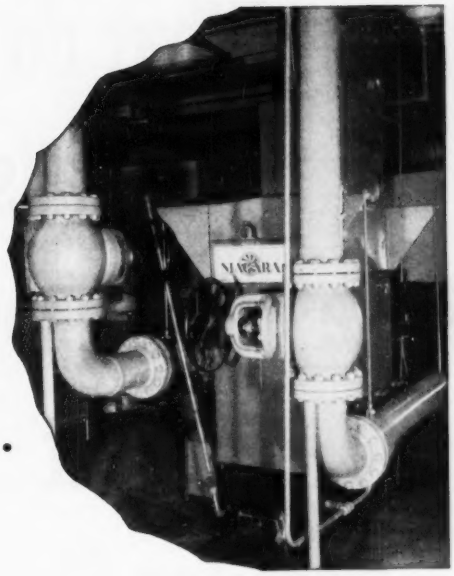
Hyman Change

Last week, following the recent purchase of Julius Hyman by Shell Chemical Corp. (*CW, May 3*), two Hyman vice presidents resigned: J. Newton Hall, vice president in charge of sales, and Roy J. Miller, vice president in charge of manufacturing. It is expected that Lloyd M. Joshel, treasurer, and Robert L. Silber, secretary, will leave the organization before the end of the year also.

PICTURES IN THIS ISSUE:

Cover (top)—Brookhaven Natl. Lab.; Cover (bottom) & pp. 57-58—William Vandivert Photo; p. 15 (top, left)—Wide World; p. 15 (bottom, right)—United Press; pp. 16-17 & p. 43—Syd Carson, McGraw-Hill Pub. Co.; p. 21—Ciba Co.; p. 22—Shawinigan Water & Power. p. 26 (left)—U.S. Rubber Co.; p. 26 (right)—Arthur King Photo; p. 52—Cayton-Kalempner Photo.

How to get drier or cooler gases . . .



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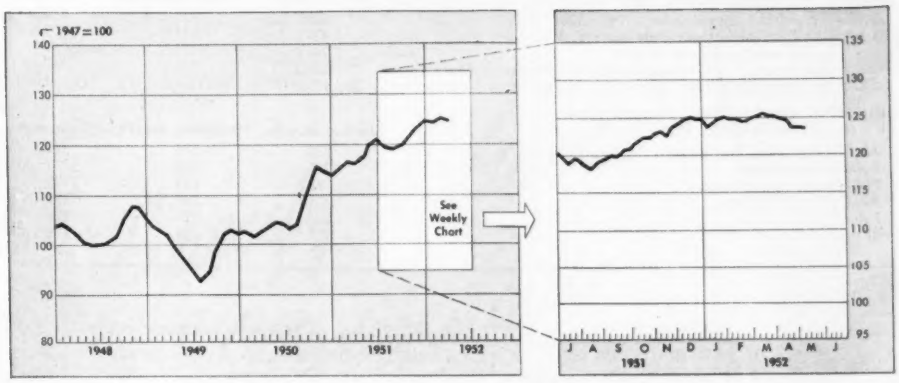

CW Index of Chemical Output—Basis: Total Man Hours Worked in Selected Chemical Industries

MARKET LETTER

The alcohol price break (page 61) is a sign of the times ahead. More news will be made in the market place, less in Washington.

With each defense-spawned plant that goes on stream will come greater pressure toward shaving of prices.

Last week, however, chemical producers still had their eyes on Washington to see 1) how the steel dispute would be resolved; 2) what action the Government might take in the oil strike.

You can be pretty sure that the supply of cokeoven chemicals imperiled by the short-lived walkout is safe. Though you may not agree with whatever settlement is reached, steel—and related chemicals—will be produced. Both the Government and industry will see to that.

But petrochemicals producers in Texas, in particular, aren't betting on any back-to-work date. Some plants are entirely down, and others will be shortly as their raw materials stocks are exhausted.

About the only bright spot in the situation: Some of the products have been long, and if it had to be, this was the best time for a stoppage.

Another big chemical process industry—papermakers—found cost relief not in the form of an official directive, but in lower prices for unbleached kraft pulp.

Some Southern producers cut the price to $125 a ton. That's $7.50 below the OPS ceiling; unbleached kraft is the first wood pulp to dip below it, but others may follow.

Reasons: Paper demand is off; a move all along the line to hold inventories down, shy from long-term contracts; increased supplies.

Washington did authorize some price changes. OPS permitted a 10% increase in ceiling prices for hardwood charcoal.

Also under consideration is a tailored ceiling price regulation for the coated and processed paper industry. If granted, it will amount to a 4% increase over ceilings frozen under General Ceiling Price Regulation.

The Linseed Products Industry Advisory Committee too wants OPS to grant its members immediate relief from a "starvation type of operation." Producers are asking for a boost in ceilings on linseed meal to put them in line with soybean meal producers.

OPS hasn't committed itself, will consider the industry's position.

MARKET LETTER

WEEKLY BUSINESS INDICATORS	Latest Week	Preceding Week	Year Ago
CHEMICAL WEEK Output Index (1947=100)	123.5	123.2	120.5
Bituminous Coal Production (Daily average, 1000 tons)	1,425.0	1,625.0	1,615.0
Steel Ingot Production (thousand tons)	2,084.0	1,724.0	2,077.0
Stock Price Index of 14 Chemical Companies (Standard & Poor's Corp.)	229.2	222.2	246.4
Chemical Process Industries Construction Awards (Eng. News-Record)	$32,406,000	$28,004,000	$22,934,000

MONTHLY INDICATORS—PRODUCTION (Index 1935-1939=100)	Latest Month	Preceding Month	Year Ago
All Manufacturing and Mining	220	222	222
Durable Manufactures	282	283	277
Non-durable Manufactures	188	190	199
All Chemical Products	293	296	292
Industrial Chemicals	561	558	524
By-product Coke	178	178	176

Soybean processors are in the same kind of squeeze between high costs of raw materials and low price ceilings on products. After several months of unprofitable operation, they have curtailed production.

Archer-Daniels-Midland has closed a Decatur, Ill., unit, is closing its Chicago plant, and will close its Mankato, Minn., plant. Staley has shut its Decatur plant, too, and Swift has halted operations at its Fostoria, Ill., unit; will continue operating five others but the situation looks bad.

Only an advance in oil and/or meal prices or a reduction in the price of beans will bring about resumption of processing.

The soft styrene market received a further jolt in the form of a contract sale of several hundred thousand pounds of Canadian monomer in the U.S. at below the going open market price (21¢ a lb.). Organization concluding the deal was the Government-owned Polymer Corp. at Sarnia, Ont.

Polymer's Canadian contract demand has been off about 50%, and it had to move a mounting surplus. It was still able to bargain basement-price the lot despite a duty of 3½¢ lb. plus 22% ad valorem.

But the company disclaims price-cutting tactics, says it is merely a one-shot contract arrangement.

The German chemical industry is out to get back into "at least second place on the international market." That view, expressed by 54 leading chemical firms at the Hanover Technical Fair, is not news.

The country is making a determined bid to increase exports. Last year it boosted production by 40% to a value of 9,900 million marks, exported some 2,100 million marks worth.

But what is a disquieting aim is renewal of trade relations between West Germany and the Soviet group of countries. Spokesmen for the industry say they formerly sent 20% of exports to the East, claim it is "urgently necessary" to re-establish this proportion.

With the return of a sellers' market, the Chemical Market Research Association expects a big turnout at its coming meeting June 5 at New York's Hotel Roosevelt. Reason: The subject is "forecasting markets."

SELECTED CHEMICAL MARKET PRICE CHANGES—Week Ending May 12, 1952

	Change	New Price		Change	New Price
UP					
Tallow, fancy, tank cars, del'd.	$ .0075	$ .0625			
DOWN					
Alcohol, Ethyl, fermentation, gal.	.20	.55	Shellac, bleached, bone dry	$ .01	$ .49
Carnauba Wax, No. 3, crude, bgs., ton lots	.01	.90			

All prices per pound unless quantity is stated

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Titre	130.5° – 131.4°F.	129.2° – 129.9°F.	127.2° – 127.9°F.	125.8° – 126.5°F.
Color 5¼" Lovibond Red	0.1 – 0.5	0.3 – 0.7	1.0 – 2.5	2.0 – 3.5
Color 5¼" Lovibond Yellow	0.5 – 1.5	1.5 – 2.5	8 – 15	7 – 12
Unsaponifiable	0.0%	0.0%	0.1%	0.1%
Saponification Value	209 – 212	209 – 212	206 – 209	206 – 209
Acid Value	208 – 211	208 – 211	205 – 208	205 – 208
Iodine Value (WIJS)	2.5 – 4.0	5.0 – 6.5	9.0 – 11.0	12.0 – 14.0

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UNITED STATES STEEL

Alcohol Price Gap Bridged

Fermentation alcohol's second nose-dive in five months closes the gap with synthetic, levels off at 55¢ a gallon.

Prime reason: Carbide and Carbon Chemical's offering synthetic material from increased production to its trade.

Prospect for molasses: Cuban producers may be up a tree with some 320 million gallons unsold.

The long-expected closing of the price gap between fermentation and synthetic alcohol, predicted by CW in January, this week became a reality.

Although the price of both types is quasi-officially pegged at 57½¢ a gallon, an alcohol sales manager told CW he feels, "The long existent price differential between synthetic and fermentation alcohol is in actuality wiped out."

Some newspaper reports attributed the new slash to a rising supply of synthetic ethanol, coupled with a declining demand. But this is not the complete picture. Fermentation producers have maintained a steady 75¢ a gallon price since last January's cut from 90¢ despite Shell Chemical's quoted 55¢ figure for its synthetic. For very little 55¢ synthetic found its way onto the open market.

But Carbide and Carbon's move of offering its excess synthetic alcohol in the open market has sharply altered the landscape, raised not a few eyebrows. The general speculation among other producers for the reasons behind UCC's maneuver:

- Declining sales of chemicals which normally consume most of Carbide's ethanol output.
- Resultant mounting inventories.

On the other hand Carbide says unequivocally the reason for the step is its own "increased production;" anyway the 55¢ a gallon price tag had already been established several months ago by Shell.

This much is certain: Carbide set the present pace; other producers, with the exception of Shell, followed. In effect, there was no choice for the others. It was either drop the price or drop out of the market. But this is just one thorn in the side of the fermentation-process boys.

Other Thorns: The estimate this week is that synthetic now accounts for more than half of total ethyl alcohol production; fermentation production may fall further behind by year's end.

No help either is the sticky Cuban blackstrap molasses mess. Prior to last week's price for alcohol, U. S. consumers of Cuba's huge (330-340 million gallons) molasses output were adamant in their refusal to pay the Cuban agency's 20¢ a gallon, f.o.b. Cuba, asking price, thought 14-15¢ plenty high enough.

While it's doubtful that fermentation producers can shell out more than 10-11¢ in the light of current events, at least one blackstrap customer showed little concern over the situation, felt that a reasonable price break was imminent. With its product moving as slow as molasses in January (3-4% of the current crop sold thus far), the agency in Cuba seems to be literally stuck.

Fermentation producers are feeling another barb: RFC's decrease in the required use of butadiene made from the comparatively high-cost ethyl alcohol for its GR-S synthetic rubber. Recently RFC determined it could trim 3¢ a pound off its selling prices of GR-S by shying away from the alcohol butadiene, still maintain a break-even position.

But apparently not all the fermentation-route ethyl alcohol producers were taking the thorn-pricks quietly. At least one such producer is giving more than casual consideration to launching a synthetic project of its own.

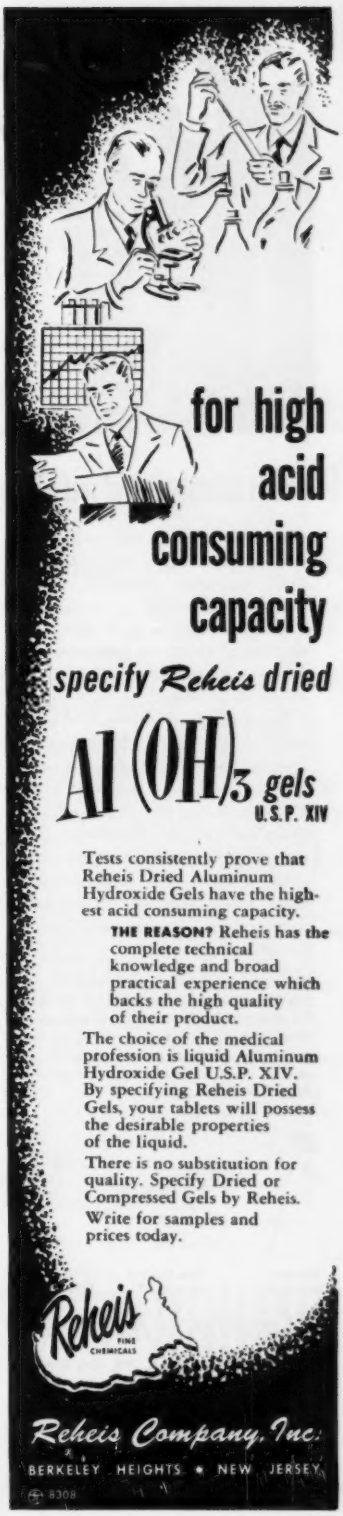
"Ideal Export Time"

As solid as its opposition to the excess profits tax is the chemical industry's unanimity concerning the market status of acetone this week:

- **Acetone is in "slightly more than long supply."**
- **Whatever material is moving, is moving slowly.**
- **No one anticipates any significant changes in either price or supply during the next few weeks.**

The current price (8½¢/lb., cl.), with no apparent shaving to sellers, is as low as it possibly can be and still avoid "loss item" category. Said one prime producer this week, "The bone is picked clean as far as manufacturing cost is concerned."

Factors contributing to the overcast are many. Heading the list is the textile slump, the chemical field's whipping boy for the moment, followed closely by the same jittery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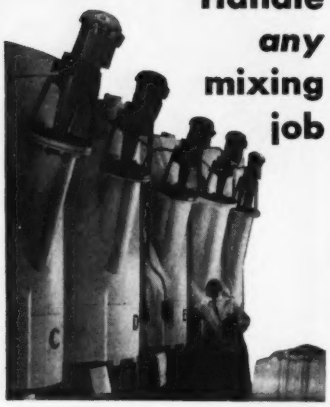

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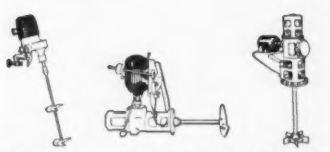

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MARKETS . . . . . .

what'n'hell's-going-to-happen-next attitude pervading the rest of the country's big industries.

No white clouds either are taxes, the coming elections and, looming more ominously, impending contract negotiations with chemical workers, oilmen, coal miners, rubber workers and others.

Bell-ringer could be the quiet walkout of 435 operators and maintenance men at Union Carbide and Carbon's Whiting (Ind.) plant. What effect the strike will have on the loose acetone market is not quite clear. Indications are that a prolonged strike, with its resultant loss in production, would tend to have a tightening influence, but not much. Producers' sentiments might very well be, "if it had to happen, now is as good a time as any."

One lightly silver-tinted cloud in the gloomy sky is the expected increase in methyl isobutyl ketone: from 78 million lbs. in 1951 to a hopeful 81-84 million by 1953. That increase should siphon off 4-7 million lbs. of acetone. (Total acetone requirements for MIBK by 1953: 89 million lbs.)

A rough, estimate of the end use pattern for the balance of 1952 and early 1953 reads like this:

35-38% . . Acetic anhydride
27-30% . . Derivatives (MIBK, diacetone alchohol, mesityl oxide, etc.)
14-16% . . Cellulose acetate (solvent use)
7- 9% . . Solvents (film, lacquers, adhesives)
2- 4% . . Acetylene (solvent)
4- 5% . . Misc. (drugs and pharmaceuticals, rubber chemicals, methacrylates, etc.)

Export Expert: But if the domestic picture is dark, the export outlook is downright black. Or so said American-British Chemical Supplies' foreign department manager Walter H. Ballard, in an interview with CW.

"This *would* be the ideal time to export acetone," sighed Mr. Ballard. "The price is right, supplies are more than ample, there is still a certain demand in Europe." But there was a big but: It can't be done.

Last year when Belgium, France, and to a lesser degree, Italy and England, were screaming for acetone, OIT kept it on the positive list of products which require individual validated licenses for export. A consistent 9 out of 10 applications were stamped "RWA"—returned without action—in effect, rejections. The hold-ups were costly.

Growing German producers, principally in Ludwigshafen, saw the breach, moved in. Envious American foreign suppliers daily watched—and are still watching—lush European markets plopping on German platters.

Three good reasons why America can't compete:

- Validated export license requirements complicate sales.
- Cost of packing, shipping overseas and insurance.
- Germany is satisfied with the franc, lira and pound sterling; and, unlike U.S. exporters, doesn't require payment in American dollars.

A near-carbon copy state of affairs exists in South America, to which acetone can be shipped on a general export license. But Brazil and Argentina are now producing their own acetone, find it cheaper than buying American.

Any OIT decision to put acetone on a general export license basis for Europe and the Far East wouldn't help a bit at this late date, but drastic cost cuts in manufacture might. From here that possibility seems up in the ionosphere.

Government Needs

Bid Closing	Invitation No.	Quantity	Item
Commanding Officer Watervliet Arsenal Watervliet, New York, Attn: Procurement			
May 27	52-161B	20,000 gal	Oil, cutting, sulphurized, fatty mineral per specifications
		15,000 gal	Oil, mineral lard per specifications
Dallas Chemical Procurement District, Dallas, Texas			
May 22	41-040-52-44B	2,400 lb	White lead paste in oil spec. TT-W-261A
		24 gal	Oil linseed boiled spec. TT-O-34
		4,000 gal	Lacquer enamel yellow spec. JAN-L-73
		8,800 gal	Lacquer enamel blue gray spec. JAN-L-73
Aviation Supply Office, 700 Robbins Ave., Philadelphia, Pennsylvania			
May 20	B-54299B	8,064,000 lbs	Resin alkyd solution, spec. TT R 266
	B-54300B	4,416,000 lbs	Resin alkyd solution, spec. TT R 266
Chemical Corps, U.S. Army, New York Chemical Procurement District, 180 Varick St., New York 14, N.Y.			
June 4	CML-30-070-52-85	35,000 lbs	Potassium permanganate, tech. grade, metal drums, 100-pounds net
	CML-30-070-52-86	20,004 gals	Carbon-tetrachloride, tech. grade; spec. O-C-141 7 January 1944, amendment 4, 8 June 1951; metal cans, one-gallon net

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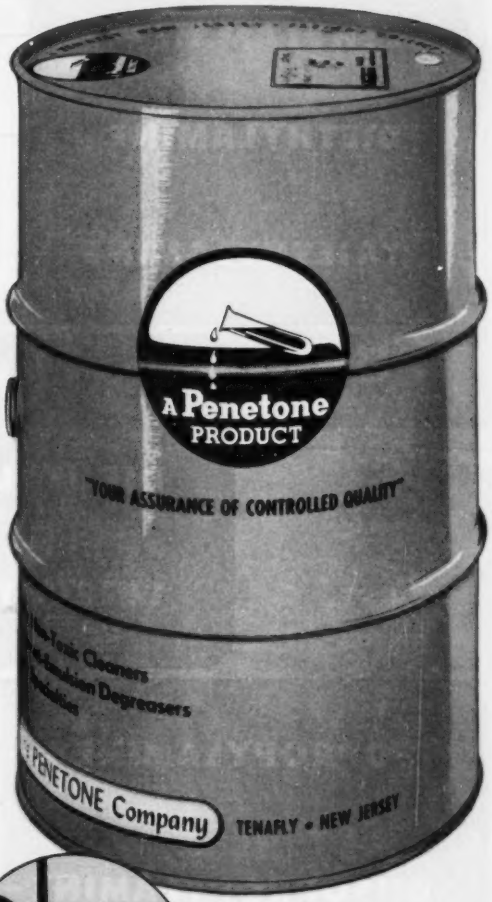

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BOOKS.....

Practical Radiography for Industry, by H. R. Clauser. Reinhold Publishing Corp., New York, N.Y.; x+301 pp., $7.50.

A how-to-do type of book on radiography and its use in industry, gives information on the procedures, exposure factors, techniques and materials involved in performing radiographic inspections. A brief summary of basic principles appears here, but it is the practical which is stressed.

Molybdenum Compounds, by D. H. Killeffer and Arthur Linz. Interscience Publishers, Inc., New York, N.Y.; xiv+407 pp., $10.50.

A critical review of the facts on the sources, properties, structure, chemical behavior, and uses of molybdenum and its compounds. Writing from an industrial point of view, the authors discuss the applications of molybdenum compounds in a rather detailed fashion; metallurgical applications are not treated here.

MEETINGS...

Natl. Cottonseed Prod. Assn., annual convention, Roosevelt Hotel, New Orleans, La., May 19-21.

Amer. Soc. of Quality Control, Syracuse, N.Y., May 22-24.

Flavoring Extract Mfrs.' Assn., annual meeting, Edgewater Beach Hotel, Chicago, May 25-28.

Natl. Assn. of Purchasing Agents, annual convention, Convention Hall, Atlantic City, May 26-28.

Chem. Inst. of Canada, annual conf. & exhibition, Mount Royal Hotel, Montreal, June 2-4.

Assn. of Consulting Chemists & Chem. Engrs., annual spring outing, Westchester Country Club, Rye, N.Y., June 6.

Chem. Specialties Mfrs. Assn., midyear meeting, Sheraton-Plaza Hotel, Boston, June 9-10.

Natl. Fire Protection Assn., annual meeting, Statler Hotel, N.Y., June 9-13.

Div. of Medicinal Chem., national chemistry symposium, Univ. of Virginia, Charlottesville, June 12-14.

Natl. Fertilizer Assn., annual meeting, Greenbrier Hotel, White Sulphur Springs, W. Va., June 16-18.

Div. of Analytical Chem., annual summer symposium, Michigan State College, East Lansing, June 20-21.

Forest Products Res. Soc., annual meeting, Schroeder Hotel, Milwaukee, Wis., June 23-25.

Mfrg. Chemists Assn., joint meeting with SOCMA, Greenbrier Hotel, White Sulphur Springs, W. Va., June 23-25.

Synth. Org. Chem. Mfrs. Assn. of the U.S., annual meeting, Greenbrier Hotel, White Sulphur Springs, W. Va., June 23-25.

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SHORT HAUL: Small plants, trucks, get it to customers when they need it.

Made Where It's Used

Reichhold Chemicals, Inc., expects sales of $150 million in 1952, puts its success largely at the door of "decentralized manufacturing" as a distribution set-up.

Already the owner of 27 plants throughout the world, 9 in the United States, the company is building, buying, and planning for 10 additional plants strategically located throughout the country, Canada and Mexico.

Small, and all but identical in construction and equipment, the plants will become as familiar to the resin buyer, hopes Henry Reichhold, as Howard Johnsons are to motorists.

With the opening of its Montreal plant next week, Reichhold Chemicals brings its total of domestic plants (United States, Canada) to 10, but this is just about the half-way mark in the company's planned expansion—all in the interest of continuing the distribution system it pioneered, made into the basis for 435 million pounds of sales in 1951.

After Montreal will come:

- Jacksonville, Fla.—negotiating for plant.
- Eugene, Ore.—have option on property.
- Mexico City, Mexico—studying market.
- Houston, Tex.—looking for suitable site.

Go To The Customer: The plants are small but strategically placed, and if more capacity is needed, another plant is built. Detroit is the market for phthalic, so in Detroit are Reichhold's three phthalic plants. The idea: going where the customer is.

Instead of making its products in one big factory, shipping all over the country, RCI makes it in a lot of little factories, ships short distances only. That's all there is to it, but it has worked wonders for RCI's sales and profits. Actually, there is more there than meets the eye.

Freight savings are a big factor in the system's favor, as are savings in package costs, since very little RCI material has to be packaged for the short distances it travels by truck. Henry Reichhold estimates freight and package costs normally run 15% to 20% of costs; with RCI's set-up these are cut to 3% to 5%.

Use of local raw materials again saves in transportation costs, insures steady, ready supply, and builds local goodwill for the company—a vital point to Henry Reichhold.

Fittings are important—from many standpoints. Cost, reliability, ease of assembly and life, to name a few. They're the stitches that hold your piping fabric together—that make it an efficient operating entity.

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Our other products include Stainless and Carbon Steel Pipe, Boiler and Pressure Tubes, Seamless Steel Mechanical Tubing. All types of Pipe and Tube Fabrication.

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Foam wastes time; takes space; invites fire.

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Tar and asphalt, for example, are effectively defoamed during processing as well as during application by concentrations of Antifoam A as low as 4 parts in 10 million.

Ten ounces of Antifoam A added to a 40,000 gallon batch of crystallizing sodium bromide prevented foaming in that batch and in the next 21 batches as well. Here the effective concentration works out to about 1 part in 10 million.

If cost, contamination, or full use of process equipment are prime considerations in your operations, try Antifoam A. Practically odorless, tasteless and non-toxic, Antifoam A is safe, fast and by far the most economical and versatile defoaming agent on the market.

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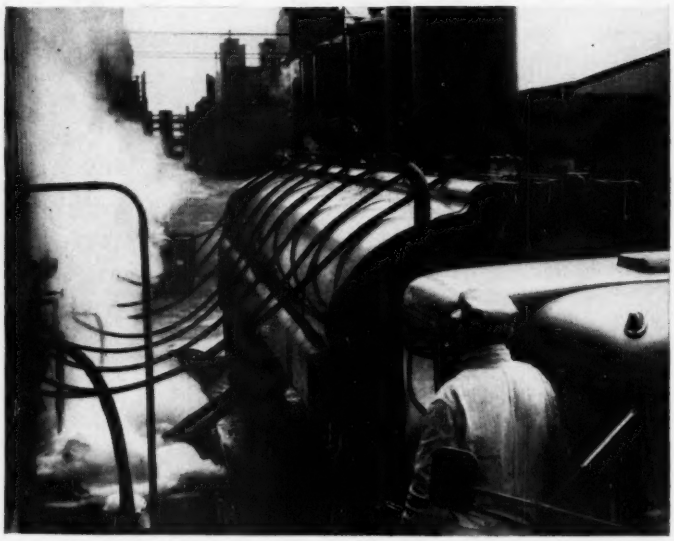


SMALL SHIPMENTS: RCI can sell small, customers don't need big stocks.

Going to the area where the resins are used, the raw materials produced, insures a good supply of local specialists in the particular material involved. This fact is highly important, says Henry Reichhold, for profitable research and efficient plant operation.

But above all, RCI feels that the decentralized system fosters customer good-will impossible to duplicate with giant centralized operations. By limiting deliveries to a maximum of 500 miles from the plant (300 miles is more nearly the ideal distance), RCI guarantees quick, accurate delivery. Delays are virtually unknown, emergencies can be met with little difficulty, and customers don't have to keep large stocks on hand—an important fact to the smaller operators. For RCI, of course, it is also much easier to calculate demand in a small area, which means that the plants don't have to keep such large stocks in storage either.

Speed and Product: Henry Reichhold sees two basic reasons for RCI's success with decentralized manufacturing. First, the company's products—synthetic resins, resin raw materials, pigments and allied chemicals—lend themselves to small plant production in almost any locality. Main problem for RCI is selling; hence nearness to the customer and sales service, are basic to successful operation.

Second, the radical increase in speed and ease of travel over the last twenty years has made it possible to keep tight control on widely separated operations. Henry Reichhold himself emphasizes the fact that without modern air travel the operations of his company would not be possible.*

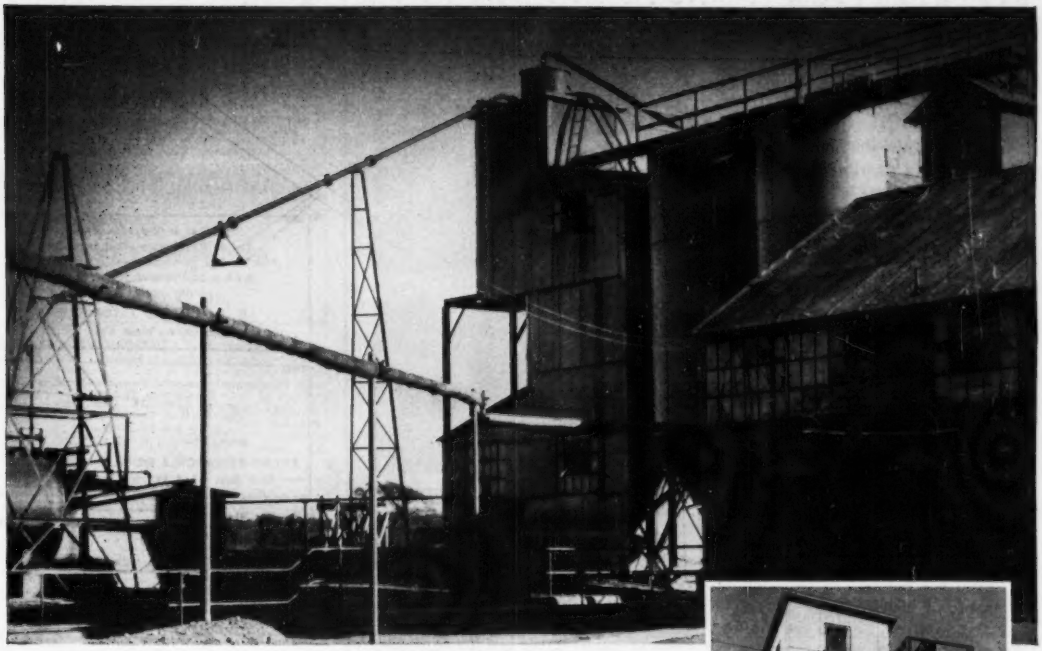
The nature of RCI's production methods are such that it has been possible to design a plant that can literally be built anywhere. They are, as it were, "assembly-line" plants in that they are all nearly identical. This reduces both the costs and headaches of initial construction, and the trials and tribulations of maintenance. A relatively small team of experts can travel from plant to plant, knowing that knowledge of one plant will hold for all others.

Trucks Plus: On the local level the distribution operations depend largely on trucks. Both tank-trucks and ordinary trailers are used. Some are owned by RCI, but most are rented on a long-term basis and have RCI's name on them. In addition to the trucks RCI operates 155 tank cars, mostly rented.

In line with its policy of small shipments, RCI uses many compartmentalized trucks to deliver a number of chemicals to the same place. The ideal maximum distance for delivery has been mentioned as 300-500 miles from the plant; if much demand exists beyond that distance, the company begins to look around for a spot to build another plant.

* More personal, and more debatable, is Reichhold's theory that his one-man ownership gives him much greater freedom of action, enables him to eliminate red tape, concentrate on customer service. Not bound by company traditions that hamstring many corporations, he, since he *is* the company, is able to try new methods, new schemes. Objection to this might be raised on the grounds that it isn't the system but the man that is progressive, and that with a different, less venturesome man in the saddle, the company could be just as hidebound as the most hidebound of impersonal corporations.

DRACCO PERFORMANCE-PROVED EQUIPMENT FOR PROCESS INDUSTRIES



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...at a Profit!

A Dracco Pneumatic Conveyor is the obvious answer for handling your toxic or hazardous bulk materials safely and swiftly—with savings!

This modern technique is being used by an eastern manufacturer of insecticides for handling lime, lead oxide, and crude arsenic. The Dracco system replaced slow wasteful manual methods which exposed workmen to burns, poisoning and injury. These conditions were eliminated by the Dracco Pneumatic Conveyor, which has more than paid for itself in labor and cost savings.

Designed for flexible operation, the pneumatic conveyor was Dracco-engineered to the exact job requirements of this plant. The dual-unit system unloads railroad cars and transfers materials from primary processing or storage to final processing at five tons per hour.

This is only one of many installations where automatic, high-efficiency Dracco Pneumatic Conveyors are solving difficult materials handling problems. Dracco engineers are at your service to apply these modern, cost-saving methods to your specific problem.

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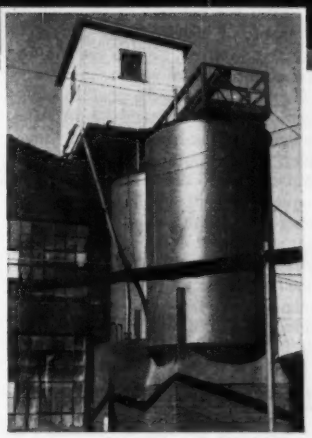

(Upper photo)—Aerial conveying line (top left) moves materials from primary processing to storage or final processing in a Dracco Pneumatic Conveyor system at eastern insecticide plant.

(Lower photo)—Reclaim lines transfer materials from storage to final processing. Versatile system also unloads railroad cars, moving materials to storage or processing.

DRACCO *Performance Proved*

DUST CONTROL EQUIPMENT • PNEUMATIC CONVEYORS

RCI prefers not to build a plant that needs more than 250 men to operate it. With more than that, the company holds that good employee and community relations are difficult.

In line with the whole decentralization scheme for distribution, RCI has, in effect, decentralized its management. The general manager of each plant has complete authority in his area, except for basic long-range company policy—still largely in the hands of Reichhold himself—and regular visits from various top-management people and traveling teams of experts. But on day-to-day matters, RCI's plant managers do their own thinking, don't have to "clear it with the top." All this, of course, stems from the theory that a local man is going to be the best "guesser" on local matters, has closest feel of community pulse.

Next, Resin Gas-Stations? So convinced is RCI of the worth of its distribution scheme that company leaders are seriously considering establishing "resin gas-stations" in areas where the material has extremely wide use in small quantities, such as the Illinois, Ohio, Indiana area.

There is little doubt that this distribution system has paid off for RCI; the figures speak quite well for themselves. Its applicability to other companies and other products is open to question. But others are already eyeing the system hungrily, and some paint companies are said to be trying it already. Of course, other companies in vastly different fields have operated similarly, but whether or not any other producer of basic chemicals will be able to follow RCI is still to be seen.

Plastic Curtain

The chemical age has forced many a change in international commerce, but last week its complex influence was particularly evident to harassed Canadian customs collectors. Their lament is centered on the latest amendment to Canada's tariff regulation, which breaks into many minute parts the general field of plastic products. Purpose: to effect a flexible protective barrier for the domestic plastic trades.

The step was inevitable. Canada's chemical industry is growing up as a close blood relative of its American counterpart. With basic raw materials, intermediates, and semi-finished products equally available across the border,* Mapleleaf enterprises can climb on the escalator at almost any point they choose.

* The Canadian economy picked up a $165 million tab for U. S. chemicals and allied products in 1951—up nearly 20% over the previous year.

OVER THE BORDER: A tailored-to-fit tariff regulation.

This poses a tough problem for the architects of an effective tariff wall. A loosely written provision on synthetic resins, for instance, may provide ample protection for a manufacturer of polystyrene, but it might also put out of business a plastics molder who is still forced to import his phenol-formaldehyde powder.

Divide and Control: With the new lists, the groundwork for a satisfactory solution to the dilemma has been laid. Dipping deeply into organic cellulose chemistry, the tariff writers performed a fractional distillation of the entire plastics field, separating the components both vertically (by degree of processing or manufacture) and horizontally (by chemically-distinguishable types).

The resulting compilation, so bulky that it had to be set up in a special series of its own, permits the application of duties tailor-made for the benefit of a particular company or industry, with little danger of intra-Dominion conflict.

Most basic chemicals and uncompounded synthetic resins are still allowed in free. Further processed materials, such as emulsions, cellulose salts, molded shapes and sheets, tend to take increasingly steeper duties, ranging from 5% to 20%, depending on the chemical constituents.

By-Product Benefit: One effect of the detailed presentation will be to give outsiders a running picture of developments in the Canadian plastics industry. The present pattern of free vs. dutied products is an accurate reflection of current manufacturing activities. As Dominion producers expand their lines and are able to satisfy Canadian demand, the number of "free" items will slowly diminish.

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If you want to be a chemical salesman, are not over 26 years old, and have two years or more experience or training beyond a bachelor's degree in chemistry or chemical engineering, we would like to have you send us your photo and a resume. We are a prominent manufacturer of organic chemicals and are expanding our sales force. Men selected will be trained in our plant and laboratories and in our sales offices before being assigned to actual selling. Reply to

SW 4012 Chemical Week
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Sales Representatives wanted to handle complete line of Vinyl protective garments and covers for industry. High quality line and well established manufacturer. Several territories open. Commission basis with good earning potential. Write stating qualifications to RW-4114, Chemical Week.

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A chemical engineer or with equivalent knowledge—experienced in selling chemical process equipment. A wonderful opportunity to eventually head up sales department of large Cincinnati, Ohio company. Must be able to travel. Salary plus commission. Write previous experience, qualifications, enclose photo if possible. Replies confidential.

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520 N. Michigan Ave.
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Sales Manager-Industrial Waxes. *Large corporation* requires services of sales executive having broad experience in sales of wax to industrial consumers. Applicant should have previous sales management back ground in this field and be capable of establishing sales organization. This offers excellent opportunity with old established company. Eastern location. Reply completely, giving education, business background, salary desired, etc. P-4119, Chemical Week.

Position Wanted

Position Wanted

BY PETROLEUM ENGINEER

Age—39 years. Graduate University of Lemburg, Poland, Europe, in 1936. Majored in organic chemistry. Was actively employed in petroleum industries in Europe from 1937 to 1944. Speaks basic English. Not afraid of hard work. Will settle anywhere.

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Chemist—over 25 years of varied experience in Chemical and allied fields, including Engineering, Chemical Research and Development, Buying and Selling. Thoroughly conversant with Government Specifications and procurement Regulations. Would consider special part time arrangements as a Consultant with small Chemical concerns. PW-4247, Chemical Week.

EQUIPMENT--used-surplus

For Sale

Calenders, New Rubber Calenders, 6x12", Johnson Joints, 7½ HP motor. Complete. Eagle Industries, 108 Washington St., NYC.

Centrifugal, 36"x43", Bird, Continuous, Consolid- dated Products, 18 Park Row, N.Y. 38, N.Y.

Centrifugals, Bird Rubber Covered. First Machin- ery Corp., 157 Hudson St., N.Y. 13, N.Y.

Centrifuge, Bird, 24" cont. Type CH series 200. Heat & Power Co., Inc., 70 Pine St., N.Y. 5.

Centrifuge, Fletcher, 40" stainless steel. Heat & Power Co., Inc., 70 Pine St. N.Y. 5.

Centrifuge, Sharples #16, St. St.. Perry Equip- ment Corp., 1415 N. 6th St., Phila. 22, Pa.

Centrifuge; Sharples Super S/S. First Machinery Corp., 157 Hudson St., N.Y. 13.

Condensers, Coil, St. St., 40 sq. ft. Perry Equip., 1415 N. 6th St., Phila. 22, Pa.

Disintegrator, Rietz 18 S/S; 30 H.P. First Ma- chinery Corp., 157 Hudson St., N.Y. 13.

Dryers,—3 Devine #23 Double Door Dryers Com- plete. Chemical & Process Machinery, 146 Grand Street, New York 13, N.Y.

Dryer; Double Drum; 28" x 5'. First Machinery Corp., 157 Hudson St., N.Y. 13.

Dryer, Rotary, 10'x90'x9/16". Heat & Power Co., Inc., 70 Pine St., N.Y. 5. Hanover 2-4890.

Dryer, Stokes, double drum, 4'x9'. Heat & Power Co., Inc., 70 Pine St., N.Y. 5.

Dryer, Stokes, rotary vacuum, 30"x8'. Heat & Power Co., Inc., 70 Pine St., N.Y. 5.

Dryer, Vacuum Shelf, 13 shelves 59"x78", Con- denser and pump. Consolidated Products, 18 Park Row, N.Y. 38, N.Y. BArclay 7-0600.

For Sale

Dryers, 2 Blvk 32x90 dble. drum, SS accessories, complete. Eagle Industries, 108 Washington St., NYC.

Dryers, Stainless Drum 5x10'. First Machinery Corp., 157 Hudson St., N.Y. 13, N.Y.

Filter, Sweetland #12, 36 leaves. Perry Equip- ment Co., 1415 N. 6th St., Phila. 22, Pa.

Filter Press, 24"x24" aluminum, 24 chambers, Consolidated Prods., 18 Park Row, N.Y. 38.

Filter Press, 30"x30", iron, Sperry, steam heated. 30 chambers. Consolidated Products, 18 Park Row, N.Y. 38, N.Y., Barclay 7-0600.

Filter Presses, all sizes and types. Process Indus- tries, 305 Powell St., Brooklyn 12, N.Y.

Flaker, Blaw-Knox, 5'x6'. Heat & Power Co., Inc., 70 Pine St., N.Y. 5. Hanover 2-4890.

Granulator, Allis Chalmers, Ball, 4'6"x7', iron lined. Used 100 hours. Consolidated Products, 18 Park Row, New York 38, N.Y. BA 7-0600

Kettle, Reaction, 10 gal. inconel, jktd. & Agit. Perry Equip., 1415 N. 6th St., Phila. 22, Pa.

Kettles, Dopp C.I. 200 to 650 gal. First Machin- ery Corp., 157 Hudson St., N.Y. 13.

Kiln, Rotary, 9'6"x8'6"x200'x¾". Heat & Power Co., Inc., 70 Pine St., N.Y. 5.

Mill, Ball Hardinge 4½'x2'. Perry Equipment Co., 1415 N. 6th St., Phila. 22, Pa.

Mill, New Rubber Mills, 6x12, 6x14, 6x16"; John- son Joints, Complete. Eagle Industries, 108 Washington St., NYC.

Mill, Pebble, 32"x36", Porc. lined. Perry Equip- ment Co., 1415 N. 6th St., Phila. 22, Pa.

Mills, Raymond #5047 high side roller, on w/two 50 h.p. 3/60/2200 V motors, piping (4). Consolidated Products, 18 Park Row, N.Y. 38.

Mills, Traylor tube, 5'x22', 5'x20', 4'6"x18'6", 4'x13', stone lined, pebble charge (4). Consolidated Products, 18 Park Row, New York 38, N.Y.

Mixer, Lab, BP Vacuum, 7½ gal. jktd, MD. Com- plete. Eagle Industries, 108 Washington St., NYC.

Mixer, 110 gal. stainless Patterson Vacuum, Con- solidated Prods., 18 Park Row, N.Y. 38.

Mixer, 200 gallon B.P. Jacketed, m.d., Consoli- dated Products, 18 Park Row, N.Y. 38.

Mixers-2-7500 lb. dry powder, double ribbon type. Chemical & Process Machinery Corp., 146 Grand Street, New York 13, N.Y.

Mixers, horiz. ribbon, 14'x7'6"x6', jktd., 600 cu. ft. (2). Consolidated Products, 18 Park Row, N.Y. 38, N.Y. BArclay 7-0600.

Pebble Mills; 8'x3', Porcelain lined. First Machin- ery Corp., 157 Hudson St., N.Y. 13, N.Y.

Pulverizer, Raymond High Side 5 roll. Consoli- dated Products, 18 Park Row, N. Y. 38, N.Y.

Reactor, Pfaudler, 400 gal., jacktd. agit. Heat & Power Co., Inc., 70 Pine St., N.Y. 5.

Tablet Press, Stokes RD4 like new. Equipment Clearing House, 289 10 St., Bklyn. 10.

Tablet Press, Stokes R, single punch, Consoli- dated Products, 18 Park Row, N.Y. 38.

Tank, New 20,000 Gal. Cap. 5/16 Steel 6 avail- able. L. M. Stanhope, Rosemont, Pa.

Tank, S/S, 3,000 gal. for truck. Perry Equipment, 1415 N. 6th St., Phila. 22, Pa.

Tank, 5700 gal., S/S Horiz., New. Perry Equip., 1415 N. 6th St., Phila. 22, Pa.

Tanks, SS, from 100-10000 gal, jktd, storage, agtd. Eagle Industries, 108 Washington St., NYC.

Tanks, 6500 gal. capacity, steel storage, recov- ered from dismantled tank cars, coiled & non-coiled. Marshall Railway Equipment Corp., 50 Church St., N.Y. 7, N.Y.

Tanks, S.S. Storage & Mixing, all capacities. Process Industries, 305 Powell St., Brooklyn 12.

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Petroleum Solvents

8-p. booklet containing tabular data on the properties and specifications of the firm's line of industrial petroleum naphthas, aromatic petroleum solvents and hydrocarbons, and industrial petroleum paraffin hydrocarbons. American Mineral Spirits Co., 230 North Michigan Ave., Chicago, Ill.

Hydrides

16-p. booklet discussing the hydride process, properties of metallic hydrides, titanium, zirconium, storage, handling and drying of zirconium and titanium metal powders, calcium, sodium and lithium hydrides, and related subjects. Metal Hydrides, Inc., Beverly, Mass.

Sulfonamide-Type Plasticizer

Technical bulletin detailing physical and chemical properties, performance characteristics and typical formulations of "Santicizer 3," a sulfonamide type plasticizer, used in formulating heat-sealing or heat-sensitive adhesives and lacquer coatings. Monsanto Chemical Co., St. Louis, Mo.

Equipment

Unit Steam Generator

28-p. brochure covering the design features, construction, engineering details, component parts and testing of the "Preferred" unit steam generator. A supplementary section contains specification data and equipment dimensions as well as a list of standard and accessory equipment. Preferred Utilities Mfg. Corp., 1860 Broadway, New York, N.Y.

Mixers

4-p. catalog describing the firm's "Jet" mixers specifically designed for wet mixing liquid and solids, and for emulsifying, homogenizing and dispersing applications in the chemical, drug, cosmetic, textile, ink and food processing fields. Barrington Engineering Corp., 110 West 40th St., New York, N.Y.

Microscopical Dyeing

Technical bulletin, entitled, "Microscopical Dyeing Phenomena Studies with the Microdyeoscope," explains the operation and performance of the microdyeoscope, designed as a means for observing and controlling the appearance and behavior of textile fibers and the dye bath during the continuous and complete dyeing cycle. American Cyanamid Co., Calco Chemical Div., Bound Brook, N.J.

Boiler Safety Devices

24-p. catalog organized according to product-function, covers specifications and characteristics of various types of boiler water feeders, make-up water feeders for receivers, low water fuel cut-offs, pressure relief valves, temperature relief valves, flow switches, etc. McDonnell & Miller, Inc., 3500 N. Spaulding Ave., Chicago, Ill.

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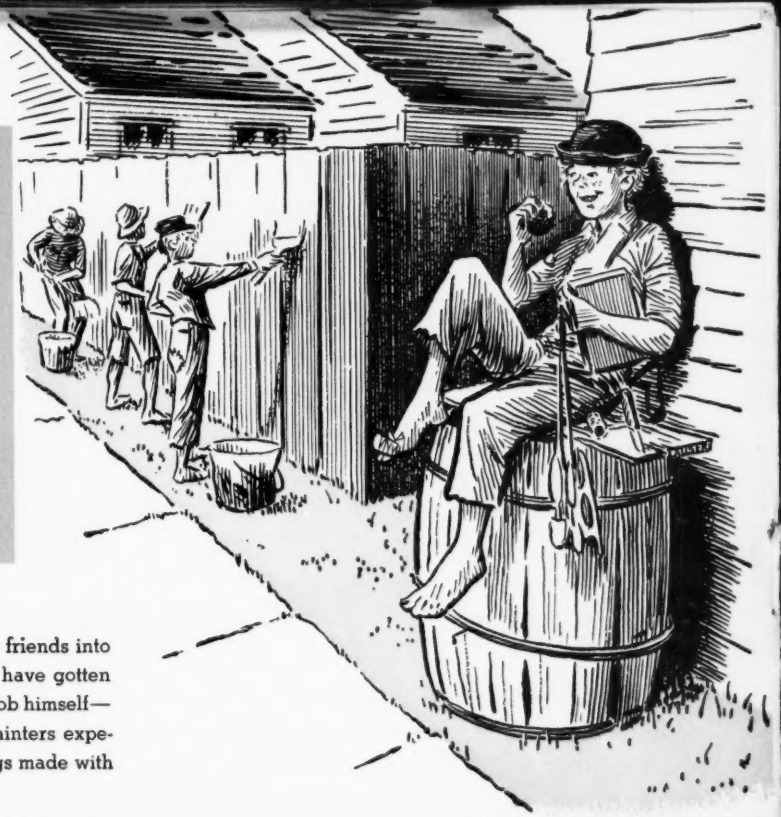

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